# Chemical Week

December 29, 1956

Price 35 cents

What's ahead in

- Sales
- Profits
- Taxes
- Dividends
- Expansion
- Production

# Forecast '57

page 40

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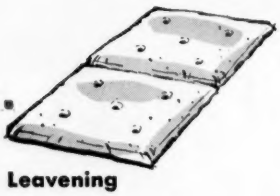
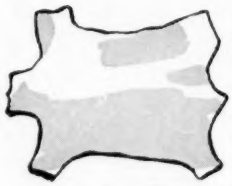
**Biscuit baking...**



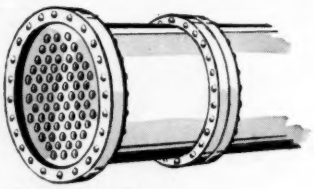
Leavening

**leather tanning...**



Neutralizing

**gypsum removal...**



Scale removal

## each uses a different property of

# SOLVAY AMMONIUM BICARBONATE

### WHICH OF THESE PROPERTIES CAN YOU USE?

**Physical and Chemical Properties**

**Molecular Weight:** 79.06

**Solubility in Water:** 14% at 10°C., 17.4% at 20°C., and 21.3% at 30°C.—Insoluble in alcohol.

**Negative heat of solution**

**Stability:** Relatively stable at room temperatures.

**Volatility increases sharply above 140°F.**

**Decomposition product ratios are as follows:**

Ammonia gas ($NH_3$).....21.5%

Carbon dioxide gas ($CO_2$).....55.7%

Water vapor ($H_2O$).....22.8%

pH of 1/10 N solution at 25°C.: 7.8

**Appearance:** White Crystals

**Quality:** Exceptionally pure. Food grade.

**Very low metal content.**

**The leavening** of thin-baked goods, the neutralization of strong leather-making acids and the removal of gypsum from processing equipment are typical of the many and diverse processes that have adopted properties of SOLVAY Ammonium Bicarbonate. These properties include the economical and complete volatilization to a nontoxic gas at low temperatures and without residue. Its solutions have lower pH and yet greater neutralizing ability than certain competitive alkalies. It also provides a dry, crystalline source of ammonia for packaged cleaning compounds.

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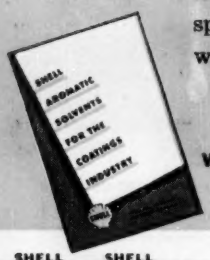
These Shell solvents cover a very wide evaporation range. Their individual characteristics satisfy specific requirements in a great variety of formulations. Detailed specifications are given in a booklet which will be sent upon request.

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. . . for applications where very fast evaporation and high solvency are required.

**SHELL XYLENE**

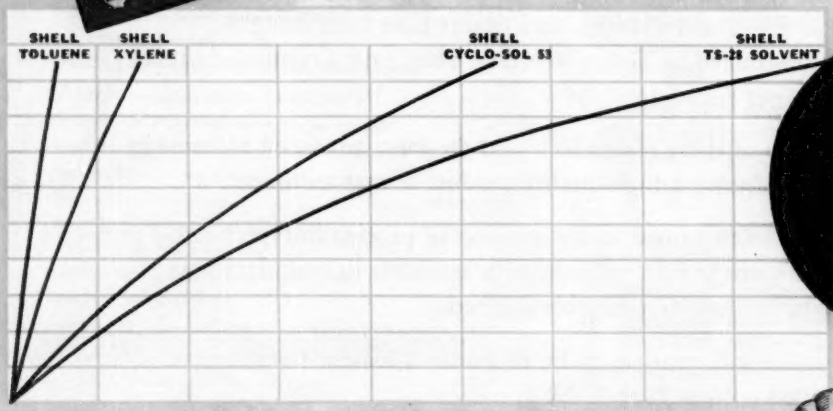
. . . has an exceptionally narrow distillation range, is slower drying than toluene.

**SHELL CYCLO-SOL 53**

. . . an excellent solvent with higher flash point and slower evaporation than xylene.

**SHELL TS-28 SOLVENT**

. . . a still slower drying aromatic concentrate of medium high solvency.

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Chemical Week

## TOP OF THE WEEK

December 29, 1956

**These are the benchmarks** to use in making your decisions for 1957 ..... p. 40

**. . . and the figures** to go along with the facts—the summaries of process industry sales, pretax profits, net profits, taxes, dividends, capital expenditures, investment per worker, production, capacity, prices, imports, exports, wages and employment ..... p. 48


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Many chemical bargaining agreements may be in limbo for several weeks. Reason: a feud within a labor union

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**Vol. 79**
**No. 26**

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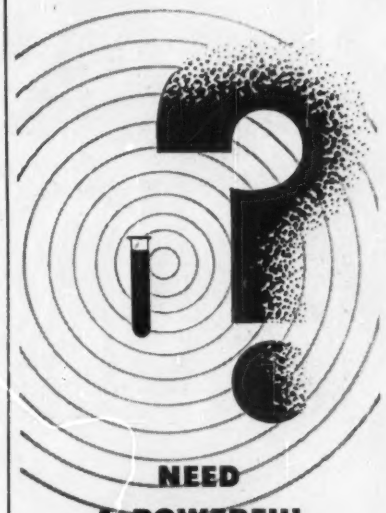

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**Investigate Jacques Wolf's Line of Hydrosulfites**

If your process requires a reducing agent it will be to your advantage to investigate the complete line of Jacques Wolf Hydrosulfites and Sulfoxylates. High in strength and purity, they are available in different physical forms to meet your specific requirements.

As reducing agents Jacques Wolf Hydrosulfites find wide application in textile processing as well as in the manufacture of pharmaceuticals and chemical compounds. In the food processing industry Hydrosulfites are widely used as a bleaching agent. As a catalyst, our Hydrozin is employed for polymerization of Vinylmonomers.

Possibly you can hasten, improve or reduce costs of your present process or product through the use of Jacques Wolf Hydrosulfites. Complete data and samples will be sent you upon request.

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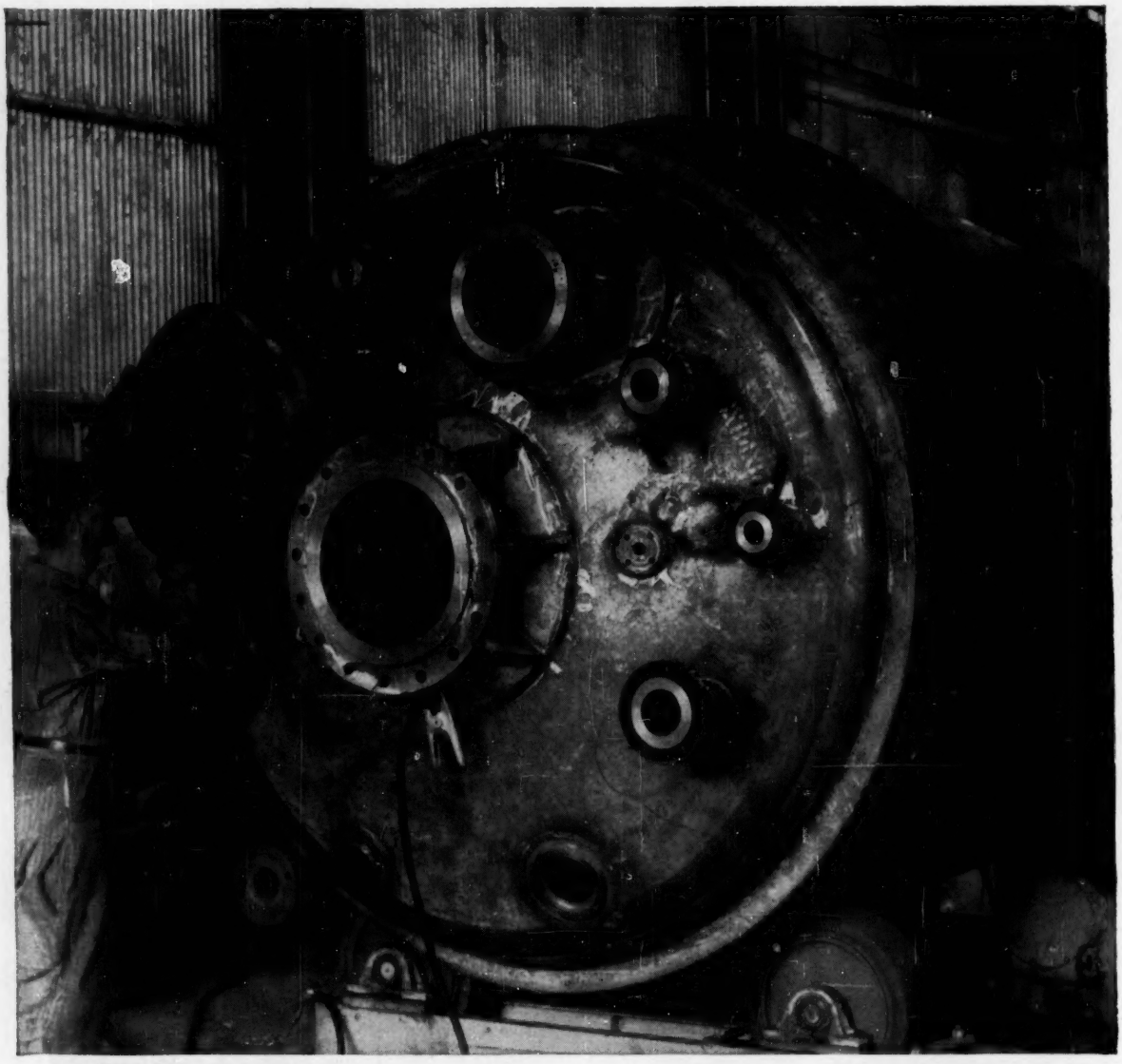

# A PEEK INTO POLY'S FUTURE . . .

For the low-pressure Ziegler process for polyethylene, Graver's long experience and well-known skills with alloy fabrication were called upon to produce the steam distillation unit illustrated here. Designed for 50 psig at 300°, the inner vessel is protected against corrosion with Type 316 ELC stainless steel and the jacket fabricated from carbon steel. Graver craftsmanship assures a long life and a profitable future for this new unit, one of six.

Graver alloy fabricating skills range from kettles to million dollar field-erected treasure chests, from 10 gage to 1½" stainless, from a simple No. 1 finish to a high polish. If your pressure vessels or storage tanks require stainless, stainless-clad, nickel-clad or other miracle metals, calling Graver will be a rewarding experience.

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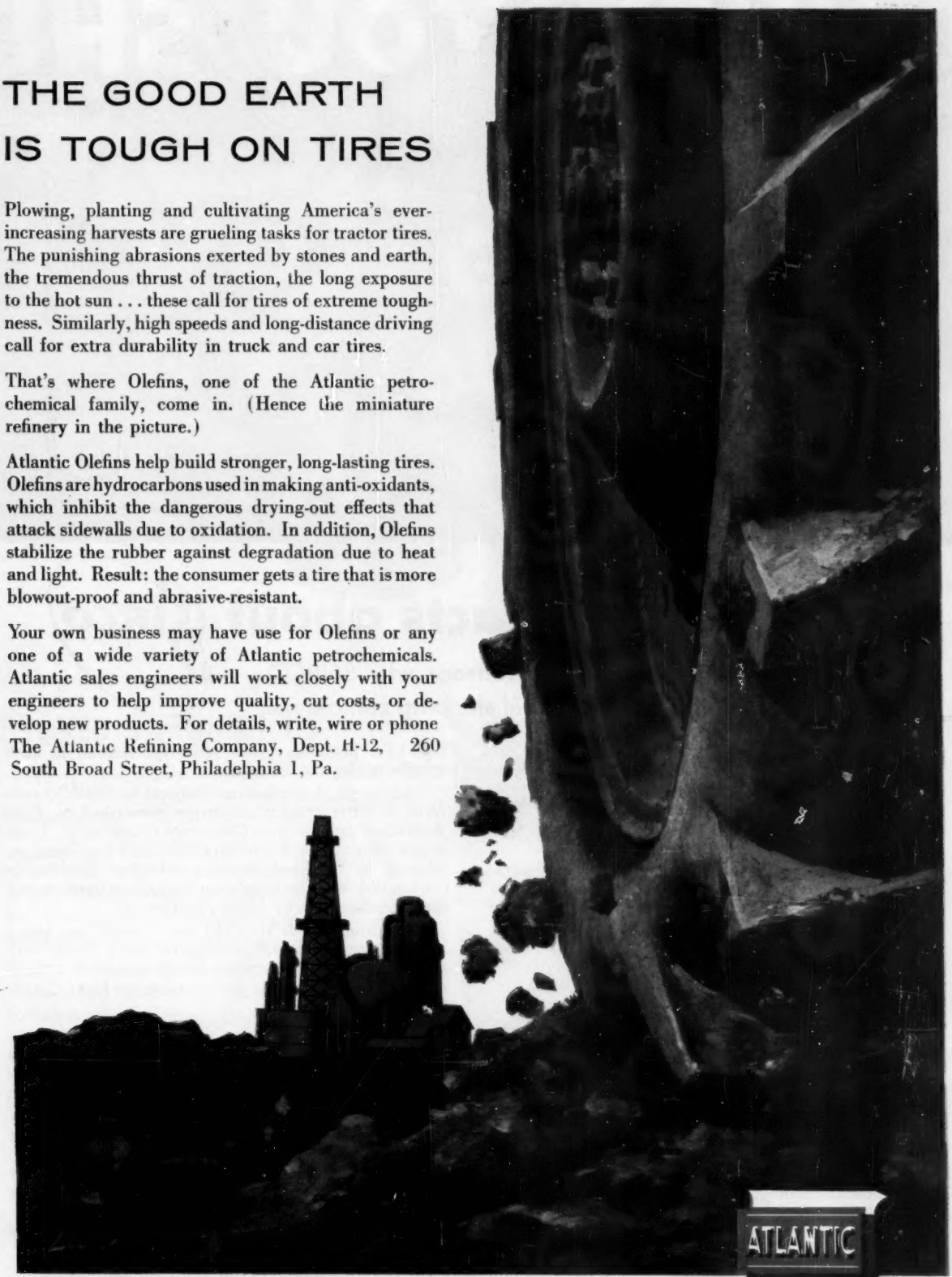
# THE GOOD EARTH IS TOUGH ON TIRES

Plowing, planting and cultivating America's ever-increasing harvests are grueling tasks for tractor tires. The punishing abrasions exerted by stones and earth, the tremendous thrust of traction, the long exposure to the hot sun . . . these call for tires of extreme toughness. Similarly, high speeds and long-distance driving call for extra durability in truck and car tires.

That's where Olefins, one of the Atlantic petrochemical family, come in. (Hence the miniature refinery in the picture.)

Atlantic Olefins help build stronger, long-lasting tires. Olefins are hydrocarbons used in making anti-oxidants, which inhibit the dangerous drying-out effects that attack sidewalls due to oxidation. In addition, Olefins stabilize the rubber against degradation due to heat and light. Result: the consumer gets a tire that is more blowout-proof and abrasive-resistant.

Your own business may have use for Olefins or any one of a wide variety of Atlantic petrochemicals. Atlantic sales engineers will work closely with your engineers to help improve quality, cut costs, or develop new products. For details, write, wire or phone The Atlantic Refining Company, Dept. H-12, 260 South Broad Street, Philadelphia 1, Pa.



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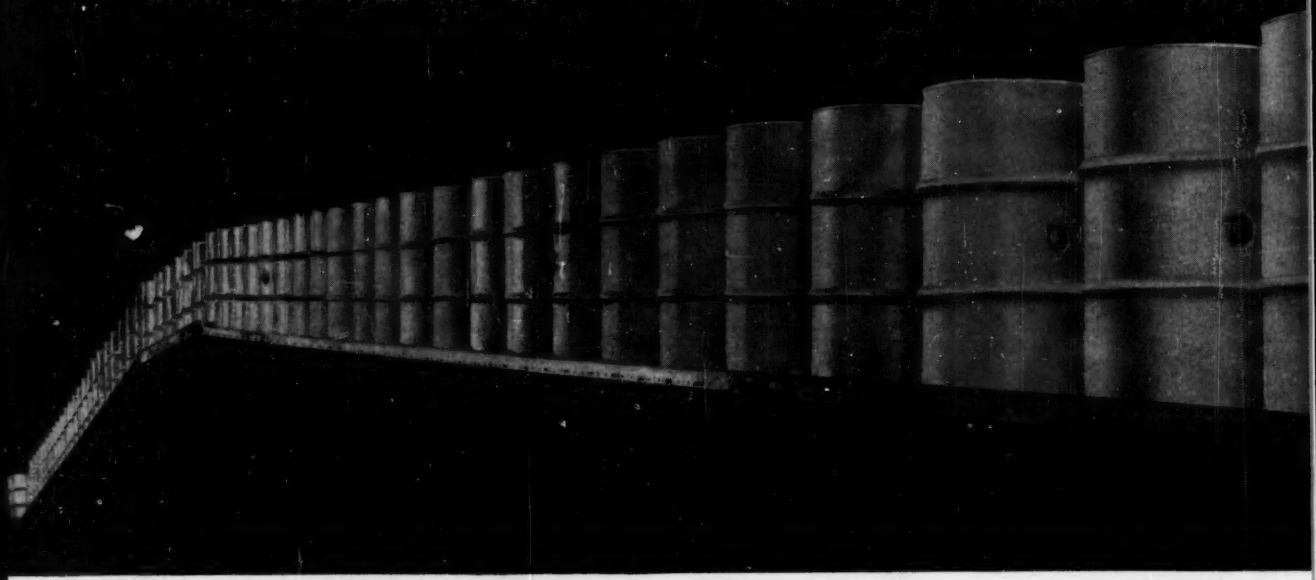
# WHEN YOU SHIP



## Consider these facts about SSIRCO®

**There are three good, basic reasons why SSIRCO drums are your best buy in steel shipping containers.**

**PRODUCT** SSIRCO standard containers are made from high-grade hot or cold rolled steel and are built to take rough treatment almost indefinitely without seepage or leakage. They are manufactured under rigid quality control standards to assure serviceability.

Drums are manufactured on a modern, semi-automatic container production line which handles both heavy- and light-gauge metal containers. This production line consists of rolling, flanging, light and heavy welders, swedging and seaming machines, horn presses, combination blanking and drawing presses. The finishing section is equipped with a five-stage degreaser and phosphatizing unit, paint unit, baking oven, lacquer painting unit, and oven for inside drum liners. This modern machine enables SSIRCO to handle all types of high bake phenolic linings, as well as clear, pigmented, or other type linings required for special uses.

**QUALITY** SSIRCO has produced high quality drums consistently for thirty years. Drum users are able to rely on SSIRCO for safe and dependable storage and shipment of their goods because of this built-in quality of SSIRCO drums. Ideal for shipping foodstuffs, chemicals, petroleum, and petroleum by-products, these containers can be lined with high-bake phenolic or low resin-type finishes to meet specific quality requirements.

All standard drums manufactured by SSIRCO conform to current specifications as prescribed by CFC Rule 40 or the Interstate Commerce Commission. These drums also meet the Universal Standard Specifications adopted by the Steel Shipping Container Institute in conjunction with the Petroleum Packaging Institute and the Manufacturing Chemists Association.

All drums, both standard and special, are tested under water and by air pressure for leaks. Paint, both exterior and interior, is tested for the proper film thickness when wet and when dry to assure the highest quality containers possible.

**SERVICE** In addition to manufacturing a complete line of standard containers, SSIRCO is equipped to produce and deliver on time special drums and casings to specifications.

The Metal Container Plant is located in the heart of the South's steel district in Birmingham, Alabama. This metal fabrication plant contains over 60,000 square feet of space devoted to the servicing of your requirements with loading facilities for both railroad and truck shipments. Service on all drum orders is provided quickly and accurately.

**METAL CONTAINER DIVISION**
**SOUTHERN STATES IRON ROOFING COMPANY**
*SINCE 1914*
**2830 FIFTH AVENUE, NORTH • BIRMINGHAM, ALABAMA**

# IN SSIRCO DRUMS

## You're in good company

## PROVED THROUGH USE

Prominent companies in the process industries have proved the quality of SSIRCO metal containers through storage and shipping use. These companies have found SSIRCO drums to be dependable, high quality packages for shipping quality grade materials safely and economically. Special liners have been used to meet the requirements of some of these companies in keeping their products away from the interior metal.

Many of these companies are using drums decorated by SSIRCO. These silk-screened or stenciled decorations are made to specifications, accurately reproducing trademarks and emblems for identification.

For an illustrated, 8-page booklet about how SSIRCO drums can be made to fit your requirements for standard 30- and 55-gallon capacities or special sizes, fill in the coupon and clip it to your letterhead. There is no obligation, of course.

**METAL CONTAINER DIVISION**
**Southern States Iron Roofing Company**
2830 Fifth Avenue, North
Birmingham, Alabama

Please send me your 8-page booklet on your metal containers.

We package_____ in drums.

NAME_____

FIRM_____

POSITION_____

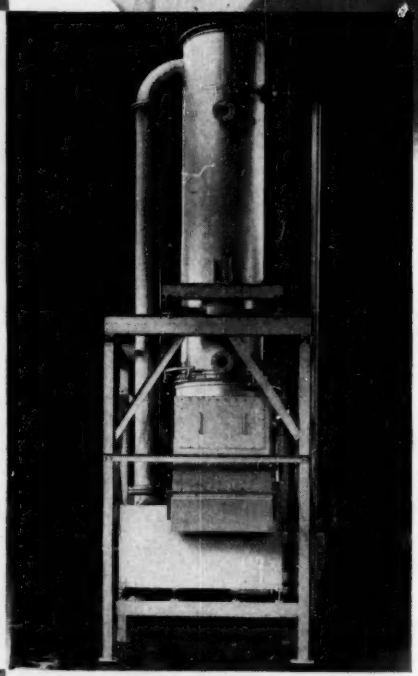
STREET_____

CITY_____ ZONE____ STATE_____

*this machine congeals, molds and discharges automatically

# "What is your processing problem?"

*If your process involves a liquid that will solidify when cooled.... ....this machine can do it....then discharge and size the substance.... all automatically



If you have a processing problem, perhaps the Vogt Automatic Tube-Type Molding Machine will provide the answer because it will form and size any liquid that will solidify when cooled, and will discharge by gravity upon heating.

Now in use by major chemical companies, these units have achieved tremendous savings in labor while producing a more uniform product. Also, since the process involves "freezing" or solidifying the substance while it circulates through tubes, the quality of the product is often superior to that of the original charge.

The wide range of uses to which Vogt Tube-Type Molding Machines have been adapted indicates their definite value in the chemical processing field. Adaptation possibilities are virtually unlimited and you may request detailed technical information from our engineers without obligation.

**Address Dept. 24A-RICW**

Vogt

Automatic Tube-Type

# MOLDING MACHINE

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BRANCH OFFICES: New York, Philadelphia, Chicago, Cleveland, St. Louis, Dallas, Charleston, W. Va.

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# U.S.I. CHEMICAL NEWS

Dec. 29 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1956

## Diester Lubricants Best So Far for Jet Aircraft

### U.S.I. ISOSEBACIC® Acid Derivative Now Being Evaluated

A new diester formed by the reaction of U.S.I. ISOSEBACIC acid and 2-ethylhexyl alcohol is now being tested and shows promise as a lubricant for the fast moving parts of jet gas turbines. These lubricants must meet the stringent performance requirements of Military Specification MIL-L-7808 for satisfactory operation from 450°F down to –65°F – met most satisfactorily to date by diesters. The di-2-ethylhexyl ester of sebacic acid is most commonly used.

The chief advantage of the new diester is its derivation from unlimited petrochemical sources which can be counted upon to supply all needs at all times, even in emergency situations. U.S.I. ISOSEBACIC acid itself will be available in quantity when U.S.I.'s 10,000,000 lb. per year plant at Tuscola, Illinois comes onstream in mid-1957.

U.S.I. ISOSEBACIC acid is a mixture of isomers of sebacic acid in about these proportions:

| | |
|---|---|
| 2-ethyl suberic acid | 72-80% |
| 2,5-diethyl adipic acid | 12-18% |
| sebacic acid | 6-10% |

In addition to the jet lubricant application, the material is being evaluated in vinyl resin plasticizers, polyurethane rubbers and foams, alkyd resins, nylon molding compounds and polyester resins. Samples can be obtained upon request.

## *Photographic Prints from Diazo Process Improved By Urethan Addition*

The diazotype process for reproducing written and illustrative material on light-sensitive paper has been improved by incorporating carboxamides such as urethan (ethyl carbamate) into the light-sensitive diazo layer. Material can now be processed at high speed, yielding prints which are well developed, stable on storage and standing, bright in appearance and which show no tendency to curl.

Commercial diazo equipment is usually operated at or near its maximum speed of 30 feet per second in order to get the greatest throughput. At this speed, prints have in the past been frequently underdeveloped and subject to fading on storage or standing.

Now these conditions are being eliminated by incorporation of compounds such as urethan into the light-sensitive diazo layer. The preferred amount of urethan incorporated ranges from 250-350 grams per liter of diazo coating solution.

This development is but one of a growing number of applications for this versatile chemical. Urethan, first produced commercially by U.S.I., is also finding many new uses in medicine and as a starting material for chemical and pharmaceutical synthesis.

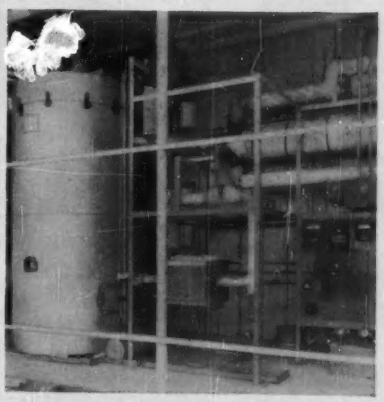
# Dispersed Sodium Is Key to New Process for Rocket Fuels

### Process Uses Sodium Two Ways — as Reactant and as Heat Transfer Agent

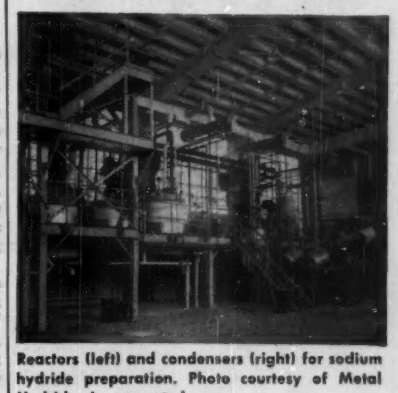
Sodium and potassium borohydrides are being produced by a new process which starts with metallic sodium dispersed in an inert liquid hydrocarbon. A semi-commercial plant now in operation is getting yields of about 95% on sodium borohydride (based on methyl borate), and up to about 90% on the potassium compound (based on contained $KBH_4$).

Borohydrides have been in the news lately as intermediates in the preparation of diborane, precursor of pentaborane rocket fuel. They are also achieving recognition among drug and fine chemical manufacturers as selective reducing agents for certain organic compounds, where undesirable side reac-

MORE



**Heat supply system for sodium borohydride plant using the sodium-potassium alloy NaK as heat transfer fluid. Furnace, electromagnetic pump and heat exchangers are shown. Photo courtesy of the Callery Chemical Company.**



**Reactors (left) and condensers (right) for sodium hydride preparation. Photo courtesy of Metal Hydrides Incorporated.**

## Melting Points of Hafnium, Zirconium, Titanium Determined by New Technique

An improved technique for the accurate determination of melting points of metals in the temperature range 1500 to 2500°C has recently been announced which sets the value for zirconium at 1855 ± 15°C, for titanium at 1668 ± 10°C and for hafnium at 2222 ± 30°C. The improvements consist of gradient heating and refinements in cavity preparation to obtain true black-body conditions. Reproducibility of results is claimed to be ± 3°C.

Although M.P. values for zirconium and titanium have been obtained which are fairly constant from one investigator to another, the value for hafnium has varied widely. Temperatures of 1975 ± 25°C, 2430°C and 2230 ± 50°C have been reported. This new method was developed primarily to fix an accurate melting point value for hafnium, and has been applied to zirconium and titanium as a matter of interest.

The technique is a modification of the general tungsten suspension method, whereby a small specimen is suspended by a fine tungsten wire in a slender, induction-heated tungsten or tantalum cylinder, under vacuum. U.S.I. has special interest in this refinement since it is constructing two new plants to produce titanium and zirconium as well as a hafnium oxide by-product. The sodium reduction process used for these metals is also capable of producing hafnium.

## Polyethylene Drums Okayed by ICC for Certain Shipments

Molded polyethylene drums have recently been approved by the Interstate Commerce Commission for commercial shipment of these regulated products: alcohols, acids or other corrosive liquids not specifically provided for, hydrochloric acid, hydrochloric acid mixtures, hydrochloric acid solutions, sodium chlorite solutions, hydrofluorosilicic acid, hydrofluoric acid, sulfuric acid, hypochlorite solutions, formic acid, formic acid solutions.

Those who wish to use polyethylene drums for the shipment of regulated products not listed above should apply to the Bureau of Explosives, 30 Vesey Street, New York, N. Y. for temporary permits. Nonregulated product shipments by road and rail were approved by the ICC early in 1955.

CONTINUED

## *Sodium*

tions must be avoided. A recent article also indicates possible use for sodium borohydride as a pulping agent in the paper industry.

### Sodium Hydride Formed First

In the new process, molten sodium and a refined, high-boiling mineral oil are agitated with high shear and heated in a hydrogen atmosphere. This breaks the metal into tiny particles which react with the hydrogen gas to yield finely dispersed sodium hydride coated with oil. Methyl borate is then added to produce a mixture of sodium borohydride and sodium methoxide. The sodium borohydride is then solvent extracted and dried.

Where the potassium compound is desired, an aqueous potassium hydroxide solution is added to the mixture of sodium derivatives to precipitate potassium borohydride.

A circulating sodium-potassium (NaK) alloy system is used to heat the reaction mass. The liquid metal is heated in a furnace, dissipates its heat in a heat exchanger, and is circulated back through the furnace. Circulation is provided by an electromagnetic pump which has no stuffing boxes and is therefore not subject to the usual leakage and maintenance problems of ordinary pumps.

### Dispersions Have Advantages

The sodium dispersion technique, originally developed to commercial feasibility by U.S.I. contributes several very important advantages in the new process:

- Rate of hydride formation is faster.
- The oil coating makes the hydride easier to handle.
- Reaction of the hydride with methyl borate is 10 times faster, proceeds efficiently, doesn't require excess hydride.
- Oil absorbs heats of solution and reaction, prevents decomposition which might result from overheating.

U.S.I. Technical Service Engineers, with experience gained in the company's sodium production facilities, have worked with two new borohydride producers in developing their plant and process designs.

## *Flexographic Printing Gets New "Voice"*

### Alcohol Use in Inks Reviewed

This September the first trade magazine devoted exclusively to flexographic printing made its debut. Called "Flexography", the magazine was created to meet the demands of this fast-growing industry for information on materials, techniques and equipment.

Flexography, a form of letterpress printing, uses rubber plates instead of metal and fluid inks which dry by solvent evaporation. An article on these inks and their formulation appears in the first issue of the new publication and should be of interest to all printing ink manufacturers.

### U.S.I. Filmex® Used in Flexographic Printing

Proprietary ethyl alcohol, according to the article, is the most versatile and commonly used solvent for the colorants and vehicles which go into flexographic inks. U.S.I. makes an alcohol formulation known as FILMEX® which was specifically designed for this application. It is carefully formulated to eliminate all trace of hydrocarbons which might soften or otherwise deteriorate rubber plates and rolls. FILMEX® is one of the most reliable solvents on the market for the purpose.

**ZIRCONIUM, TITANIUM WILL BE MADE HERE To house U.S.I.'s new 10 million pound-per-year titanium sponge plant as well as its 1.5 million pound-per-year zirconium sponge plant, the company has recently purchased this 175,000 square foot building at Ashtabula, O., near the existing U.S.I. sodium-chlorine plant. Acquisition of the giant building is expected to cut six months to a year from U.S.I.'s construction time table.**

## TECHNICAL DEVELOPMENTS

*Information about manufacturers of these items may be obtained by writing the Editor, U.S.I. Chemical News.*

**Basic formulations for a new type aerosol skin bandage** are now being offered to aerosol marketers and contract fillers in the drug field. After spraying on, the dry films reportedly adhere well, are transparent and tough **No. 1180**

**"What's Available on Microprint Cards"**, a free 8-page booklet, can now be obtained which lists the technical literature which has been put out in this form. This bibliography is divided by subject, includes works on chemistry, mathematics and physics among others. **No. 1181**

**A 125-page report on zirconium can be purchased** which covers its chemistry, properties, production and fabrication—from both the economic and technological standpoints. **No. 1182**

**New synthetic resin in 2 types — anionic and cationic** — are offered as permaselective ion exchange membranes. Other possible uses are suggested by film properties of strength, toughness, flexibility and freedom from static. **No. 1183**

**A summary on amino acid research** can now be purchased which covers: the effects of DL-methionine supplements on animals; the effects of amino acid imbalance on maintenance and growth; and the amino acid needs of children. **No. 1184**

**Acrylic thickener** recently developed is shipped as high-solids, low viscosity acidic emulsion, is diluted and neutralized to clear, viscous, low-solids solution at point of use. Said to have long-term stability. **No. 1185**

**Radioactive phenol — $C^{14}$ (uniformly labelled)** is now being offered as a tracer or synthetic intermediate in studying plant and animal chemistry, and as an aid in analyzing products such as insecticides, medicinals, plastics. **No. 1186**

**Polyethylene-based ointments** containing antibiotics and other pharmaceuticals are now available. Polyethylene replaces petroleum in part in these preparations, and is said to release more medicine at a slower rate. **No. 1187**

**The dipotassium salt of (ethylenedinitrilo) tetraacetic acid** is now offered as a chelating agent. Has better solubility in alcohol than the sodium salt. Material is a white solid, soluble in water. **No. 1188**

**A new gun for extruding caulking compounds** has been devised in which air pressure forces the compound out of a disposable polyethylene cartridge through a polyethylene nozzle screwed to it. Smooth, automatic operation is claimed. **No. 1189**

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**Ammonia:** Anhydrous, commercial and refrigeration. Tank cars or tank wagons. Also Nitrogen Fertilizer Solutions.

**OTHER PRODUCTS:**

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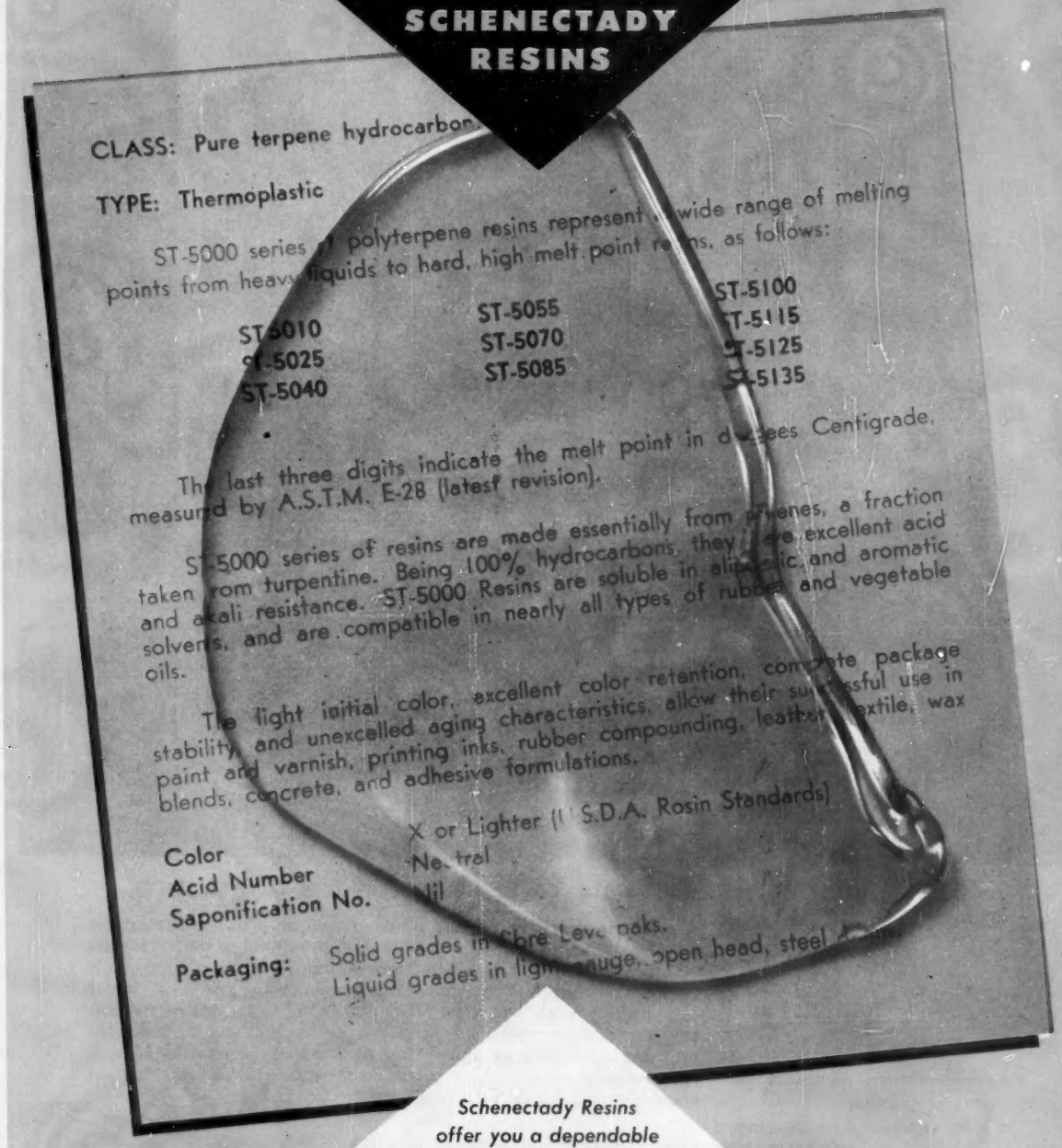
# Sparkling Bright Terpenes

FROM

SCHENECTADY

RESINS


CLASS: Pure terpene hydrocarbon
TYPE: Thermoplastic
ST-5000 series of polyterpene resins represent a wide range of melting points from heavy liquids to hard, high melt point resins, as follows:
ST-5010
ST-5025
ST-5040
ST-5055
ST-5070
ST-5085
ST-5100
ST-5115
ST-5125
ST-5135
The last three digits indicate the melt point in degrees Centigrade, measured by A.S.T.M. E-28 (latest revision).
ST-5000 series of resins are made essentially from pinenes, a fraction taken from turpentine. Being 100% hydrocarbons, they have excellent acid and alkali resistance. ST-5000 Resins are soluble in aliphatic and aromatic solvents, and are compatible in nearly all types of rubber and vegetable oils.
The light initial color, excellent color retention, complete package stability and unexcelled aging characteristics allow their successful use in paint and varnish, printing inks, rubber compounding, leather, textile, wax blends, concrete, and adhesive formulations.
Color X or Lighter (U.S.D.A. Rosin Standards)
Acid Number Neutral
Saponification No. Nil
Packaging: Solid grades in fibre Leverpaks.
Liquid grades in light gauge, open head, steel drums

*Schenectady Resins offer you a dependable source of supply for fine quality terpenes. Immediate shipments.*

GET COMPLETE INFORMATION. PHONE OR WRITE TODAY.

Section C-631

**SCHENECTADY RESINS** • DIVISION OF SCHENECTADY VARNISH COMPANY • SCHENECTADY, N.Y.

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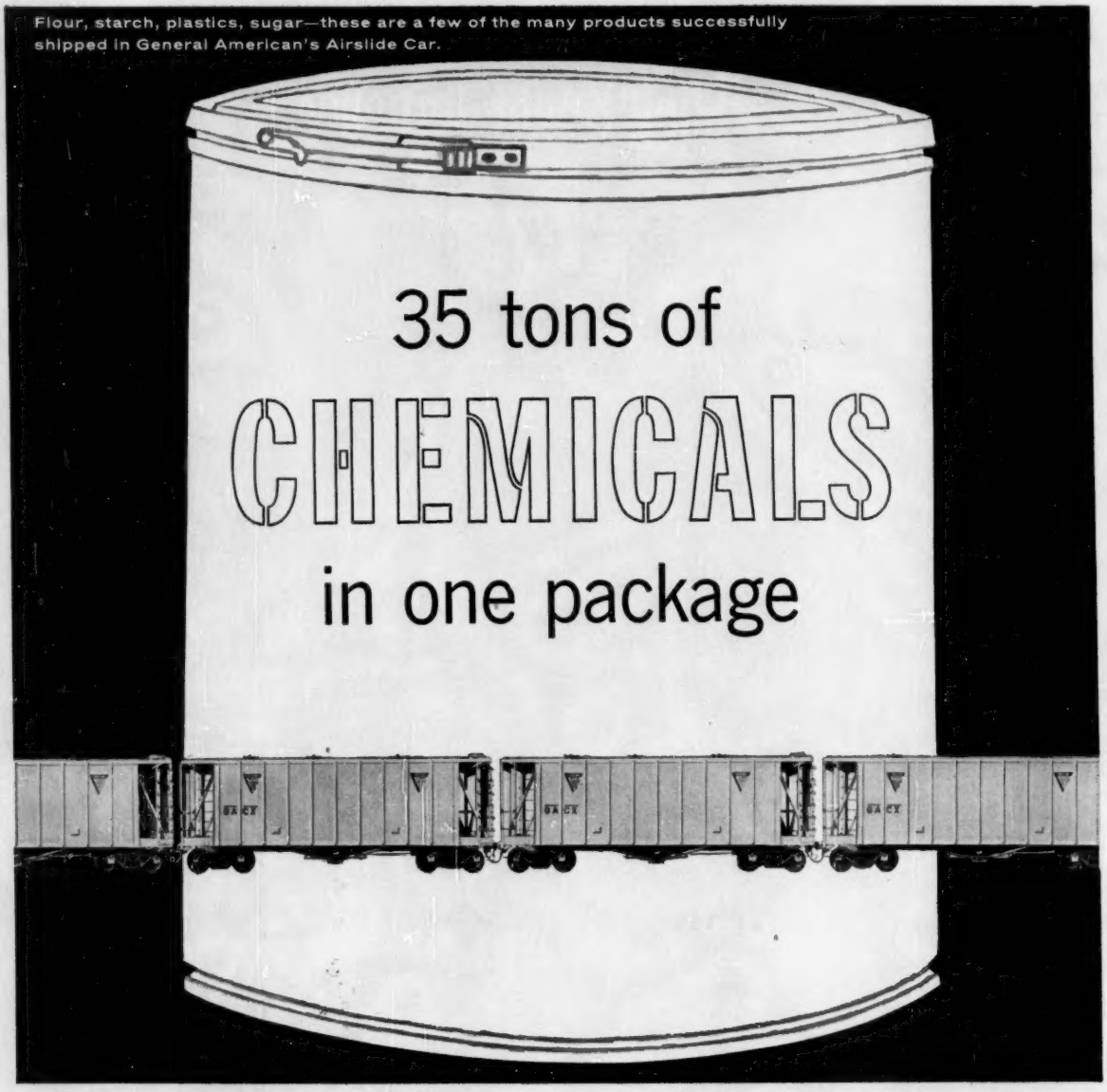
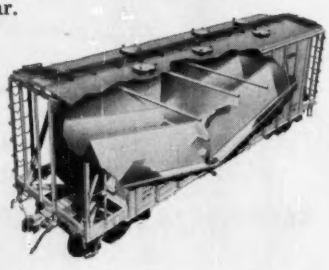



## Save! Ship chemicals in bulk via Airslide® cars

Airslide cars provide *safe, clean, economical* bulk transportation for dry, powdered chemicals. 35 tons of lighter materials (and even greater quantities of denser materials) can be shipped in a single Airslide car. Over 2000 Airslide cars are now in use or on order carrying chemicals and other commodities. They require no re-spotting, provide far more clearance for unloading and can be unloaded into any conveying system as fast as the system permits. If such requirements are important to you, write today for full information about General American's new Airslide car.

**CLEAN INTERIOR DESIGN.** *All-welded construction provides maximum sanitation and minimum product retention. All hatches and outlets provide a hermetic seal, assuring complete in-transit protection.*



AIRSLIDE GENERAL AMERICAN TRADE MARK

GENERAL AMERICAN TRANSPORTATION CORPORATION
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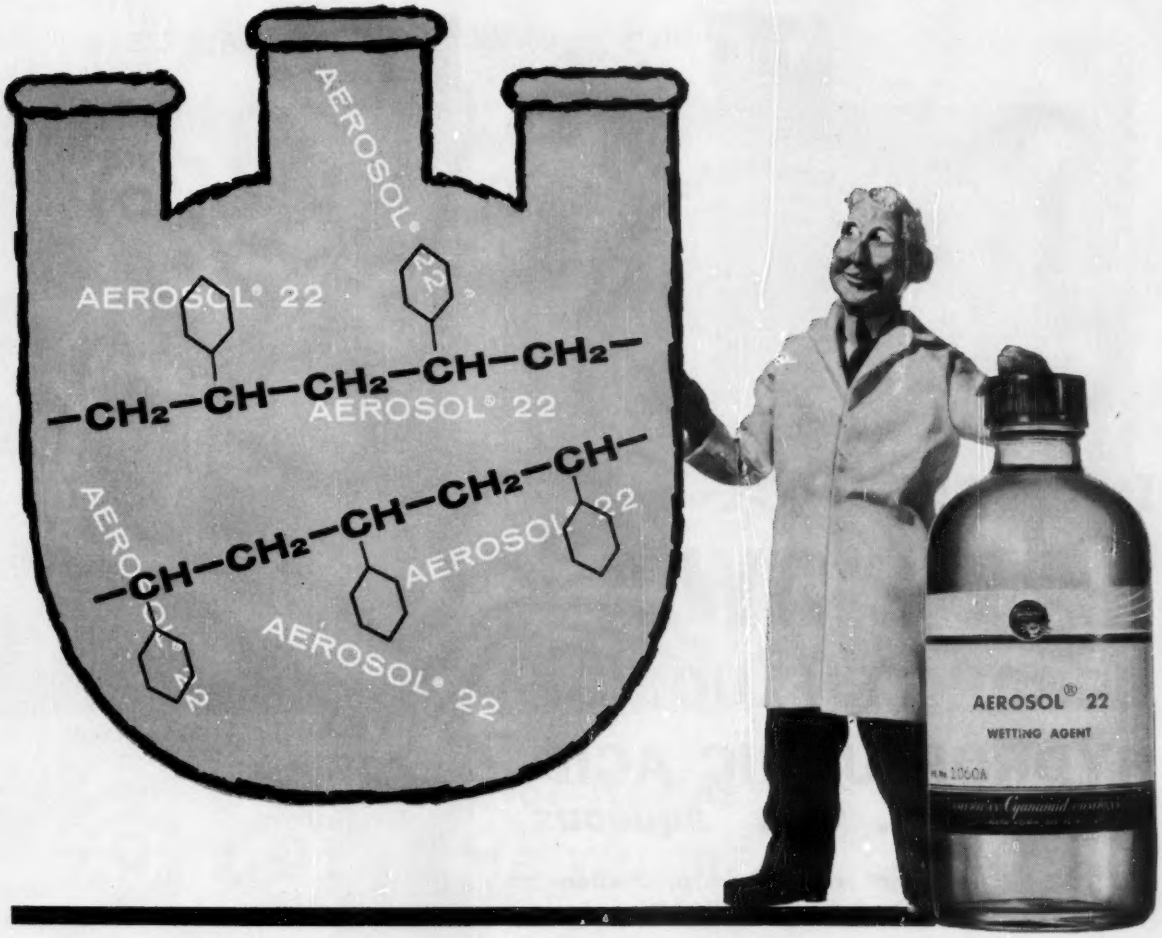



# EMULSION POLYMERIZATION

## with AEROSOL® 22

## ...gives excellent solubilization

Vinyl monomers such as acrylic esters, styrene and their copolymers are easily emulsified in water through the use of AEROSOL 22 Surface Active Agent in low concentrations. Polymerization in aqueous emulsions permits excellent process and quality control—and AEROSOL 22 is particularly suited for this application for these reasons:

**Stabilization:** Emulsions are stabilized with AEROSOL 22 against coagulation in processing or storage—even in the presence of salts, acids and alkalis.

**Film Stability:** Dried polymer films exhibit no significant water sensitivity, with no re-wetting or water spotting. Rub stability is excellent.

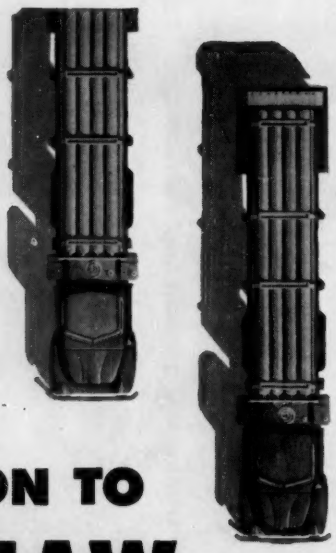
**Good Color:** Emulsion and film color is good, and in addition, AEROSOL 22 does not discolor during subsequent resin processing.

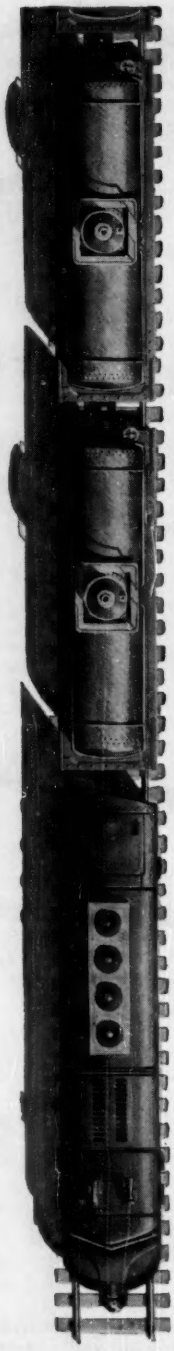
AEROSOL 22 is one of a group of AEROSOL Surface Active Agents manufactured by Cyanamid. It is a good wetting agent above 40° C and is an excellent emulsifier at *any* temperature. Three per cent AEROSOL 22 solids on the weight of the monomer gives excellent results. Combination of AEROSOL MA with AEROSOL 22 has a synergistic effect, lowering the total surfactant concentration required. Detailed information on the properties of AEROSOL 22 are given in a 20-page product bulletin, available on request.

CYANAMID

AMERICAN CYANAMID COMPANY
MANUFACTURERS CHEMICALS DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.

In Canada: North American Cyanamid Limited
Toronto and Montreal





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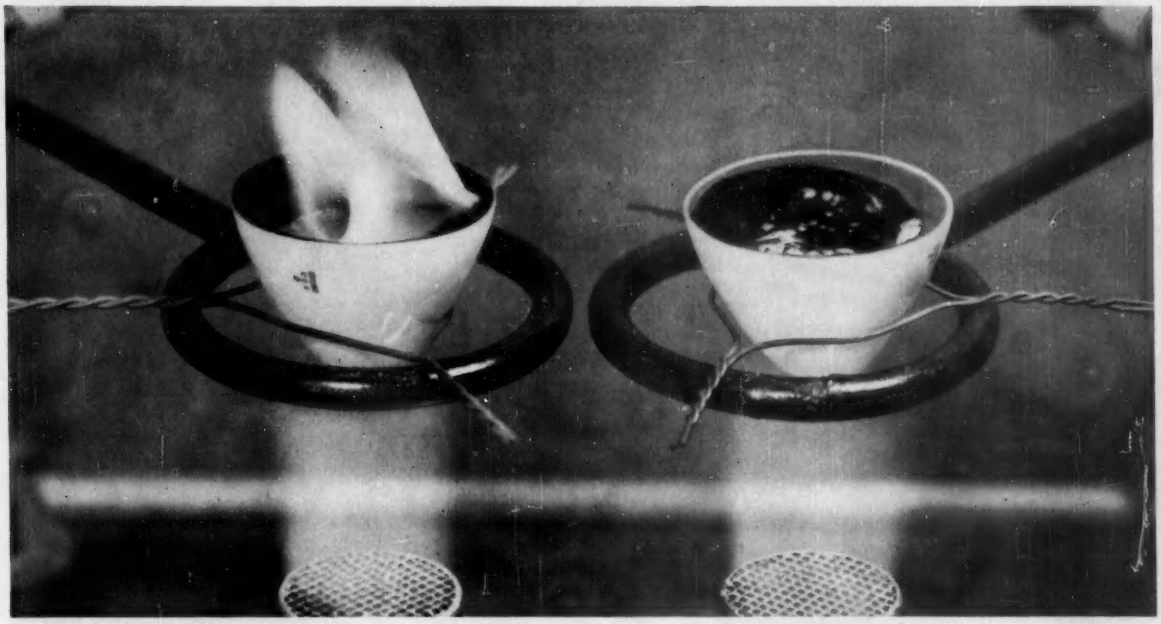


**Blast from burner fails to ignite asphalt mixed with . . .**

# Montar Resins:

# FIRE RESISTANCE WHERE IT COUNTS

**In the cluttered, clamoring field of industrial resins, you "pays your money and takes your choice." But it's rare indeed when you can pay so few cents a pound and have a choice of 5 resins compatible with asphalt, rubber and vinyls—that do so much to tailor these compositions for special jobs.**

A case in point is asphalt. The Montar resins, a series of high-melting dark-colored polychlorinated polyphenyls, are compatible with asphalt at ratios up to two parts for each part of asphalt. Incorporated in asphalt mixtures, they make flame-resistant compositions at concentrations as low as 10%. When compositions contain 25-30% Montar resin—flame-out time is instantaneous. Since incorporation is so easy, just simple heat mixing, makers of roofing compositions are perking up their interest in Montars for the sales value of offering outstanding fire resistance in the finished roofing materials.

Suppliers of paving asphalts have a reason for looking fondly on the Montars, too! With their high softening points (Montar No. 6 softens in the range of 302-410° F.), the Montars can raise the softening point of low-melting asphalts and pitches making them suitable for driveways, parking lots, tennis courts. This raising of the softening point is also of interest in friction materials and potting compounds.

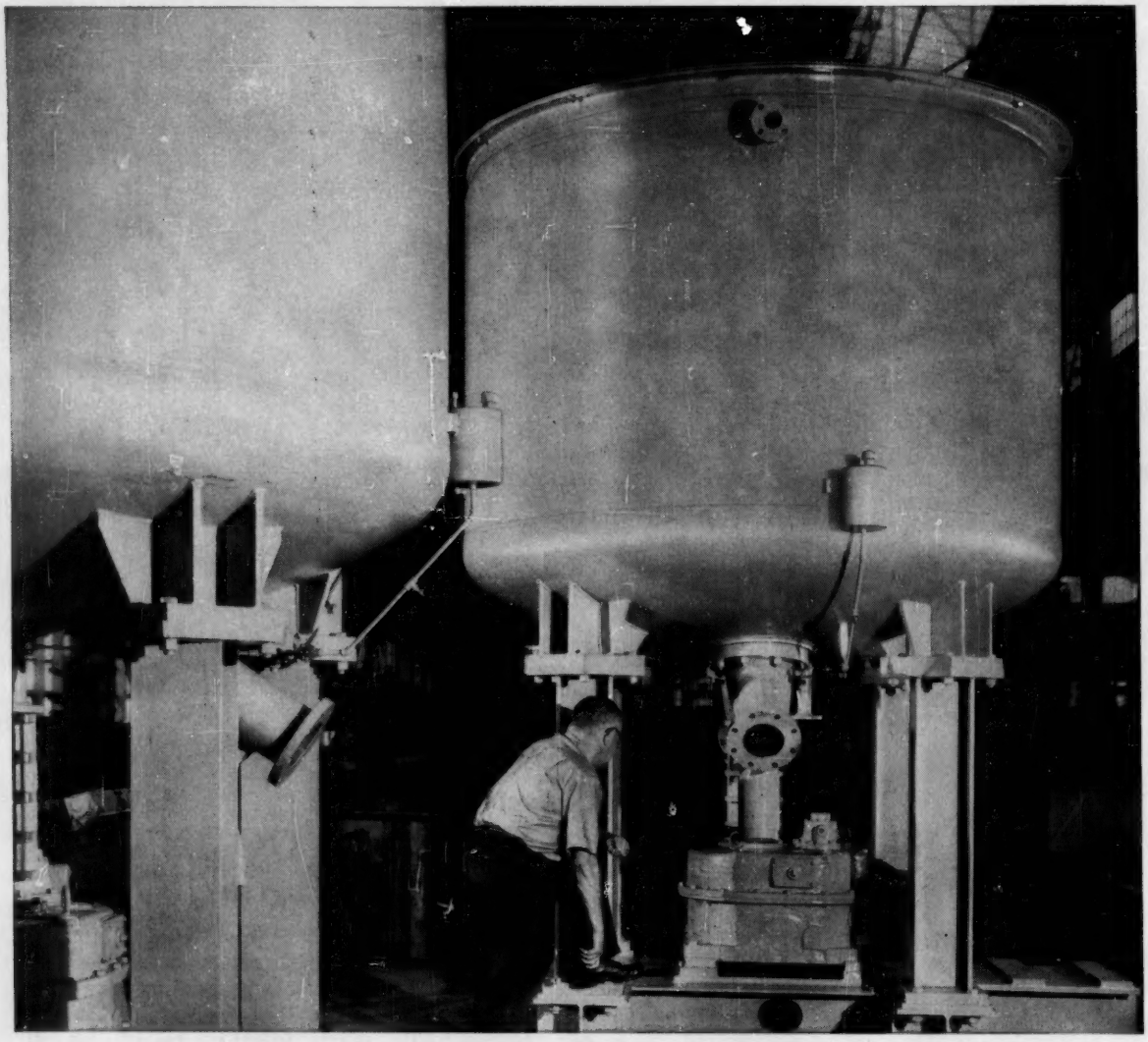
Asphalt linings for boxboard trade on the physical property modification possible with the Montars, with the added advantage of cutting down on fire hazard when handling hot pitch. Three of the five resins have no flash or fire points and flame-out time of mixtures is instantaneous.

Two other major fields of interest for the Montars are PVC compositions for joining sewer pipe and asphalt or vinyl asbestos floor tile. In these applications, the Montars are low-cost extenders for PVC resin; hardeners for flooring compositions. Up to 10 parts per hundred of PVC resin can be replaced by Montars, reducing materials costs. Handling the Montars in formulating high solids dispersions is easy; just simple mixing. In wet processing, with just 5% of any of several emulsifiers, a solution of Montars can be diluted with water up to 160%.

As if these polychlorinated polyphenyls at less than eight cents a pound did not have enough market—a 50% solution of Montar No. 4 or No. 5 mixed with a 60% solids rubber emulsion in 1:1 ratio makes a strong, low-cost paper adhesive with good, instant tack.

*Montar: Reg. U.S. Pat. Office*

Samples of Montar resins and Technical Bulletin 0139 listing comparative properties may be obtained from Monsanto Chemical Company, Dept. CS-5, Organic Chemicals Division, St. Louis 1, Missouri.



# We took a new look at Dissolvers

The problem was to increase productivity per machine hour. The process in which the dissolvers were to be used involved a slowly soluble, dough-like material which had to be held at comparatively low temperature.

Working with the customer's process engineers, design requirements for increased production were developed. The equipment would have to be larger than any previously used, and also capable of utilizing more power efficiently. This was accomplished by designing an 1800 gallon dissolver with an impeller that had high shearing action. Relatively high power, used effectively, reduced the particle size, and production per machine was more than doubled.

The solution of this problem exercised Dravo's unusual talents in the design of special purpose and large scale equipment, and called for an engineering approach unhampered by production line restrictions. If your operation could profit by the use of high energy intensive dissolvers, or other equipment designed to increase the speed and efficiency of process operations, call on Dravo. Write for Bulletin 236 for more information on Dravo Process Equipment. Address Dravo Corporation, Pittsburgh 25, Pa.

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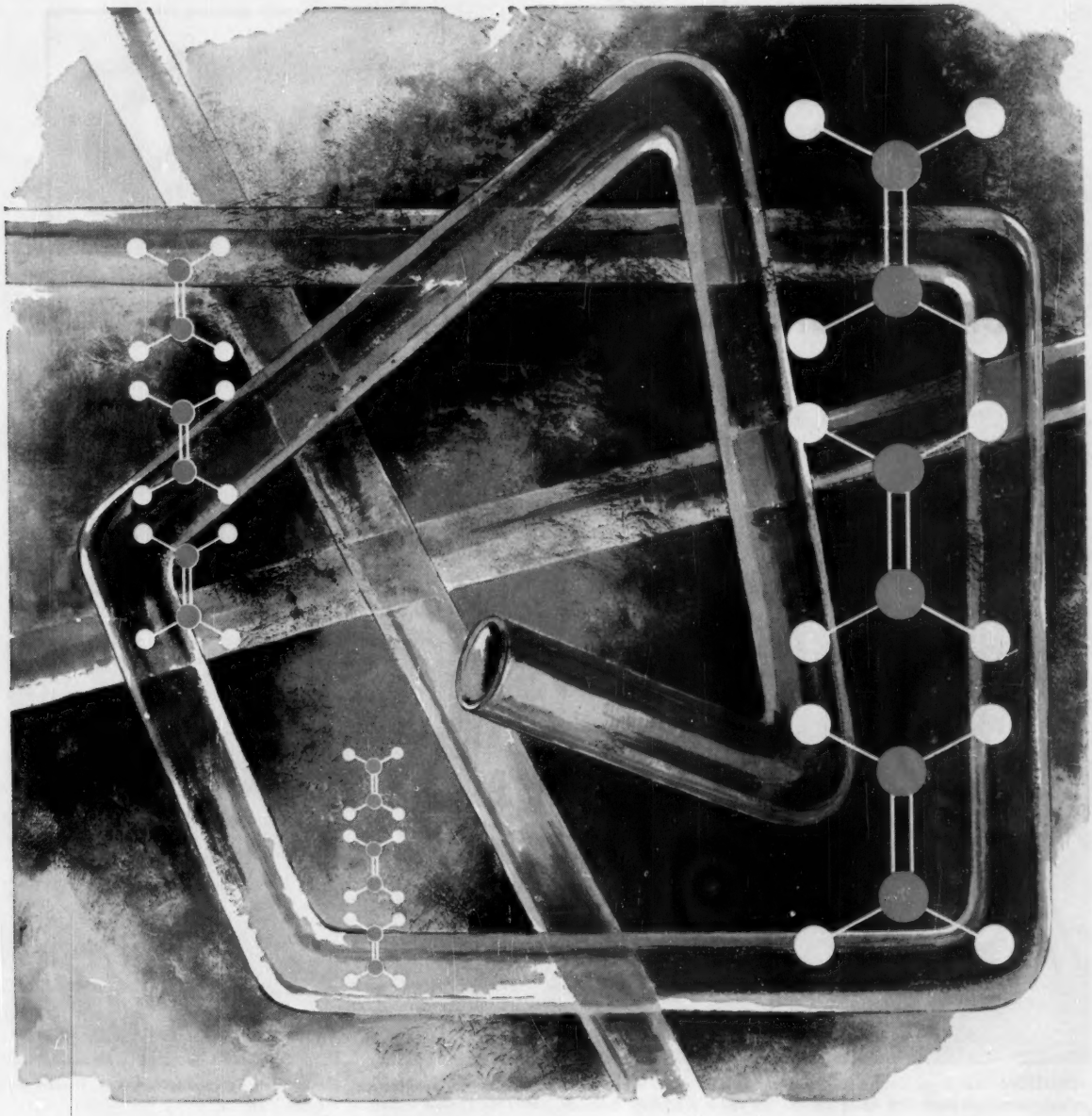

# Today, pipes come out of gas!

Pipe, electrical insulation, coatings, packaging—they're all being made of Polyethylene, the fastest-growing plastic in the world. This tough, versatile polymer is produced from Ethylene gas—one of the chemical industry's basic building blocks available from Gulf. The outstanding leader in production and distribution of Ethylene—Gulf offers you a reliable source of many other petrochemical building blocks

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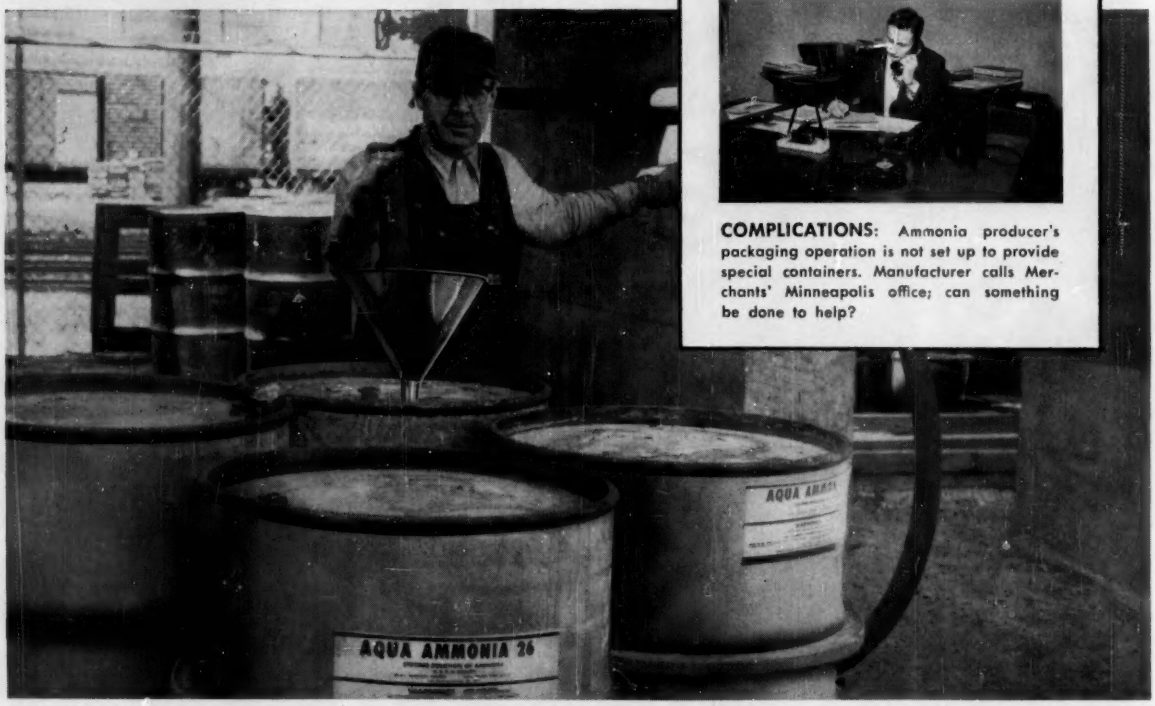
# SPECIAL SERVICE FROM MERCHANTS

## *solves customer's contamination problem*

**PROBLEM:** National manufacturer in St. Paul discovers that traces of iron impurities are causing high rate of product rejects. The culprit — rust from aqua ammonia shipped in conventional steel drums.



**COMPLICATIONS:** Ammonia producer's packaging operation is not set up to provide special containers. Manufacturer calls Merchants' Minneapolis office; can something be done to help?




**SOLUTION:** Merchants sends over its own stainless steel drums and polyethylene containers for filling by the ammonia producer, delivers them to the manufacturer. Contamination problem is licked, thanks to Merchants' most important product — *service*.

Large chemical producers are primarily in the business of making chemicals. Merchants *sells* chemicals—sells them by offering service tailored to the individual customer. Your supply problem—whether it's special containers, special delivery, or special technical help—can be solved best by a call to Merchants Chemical. Products include acids, alkalis, fungicides, surfactants, chlorinated solvents, emulsifiers, laundry compounds, soaps, dry ice and chemical specialties.

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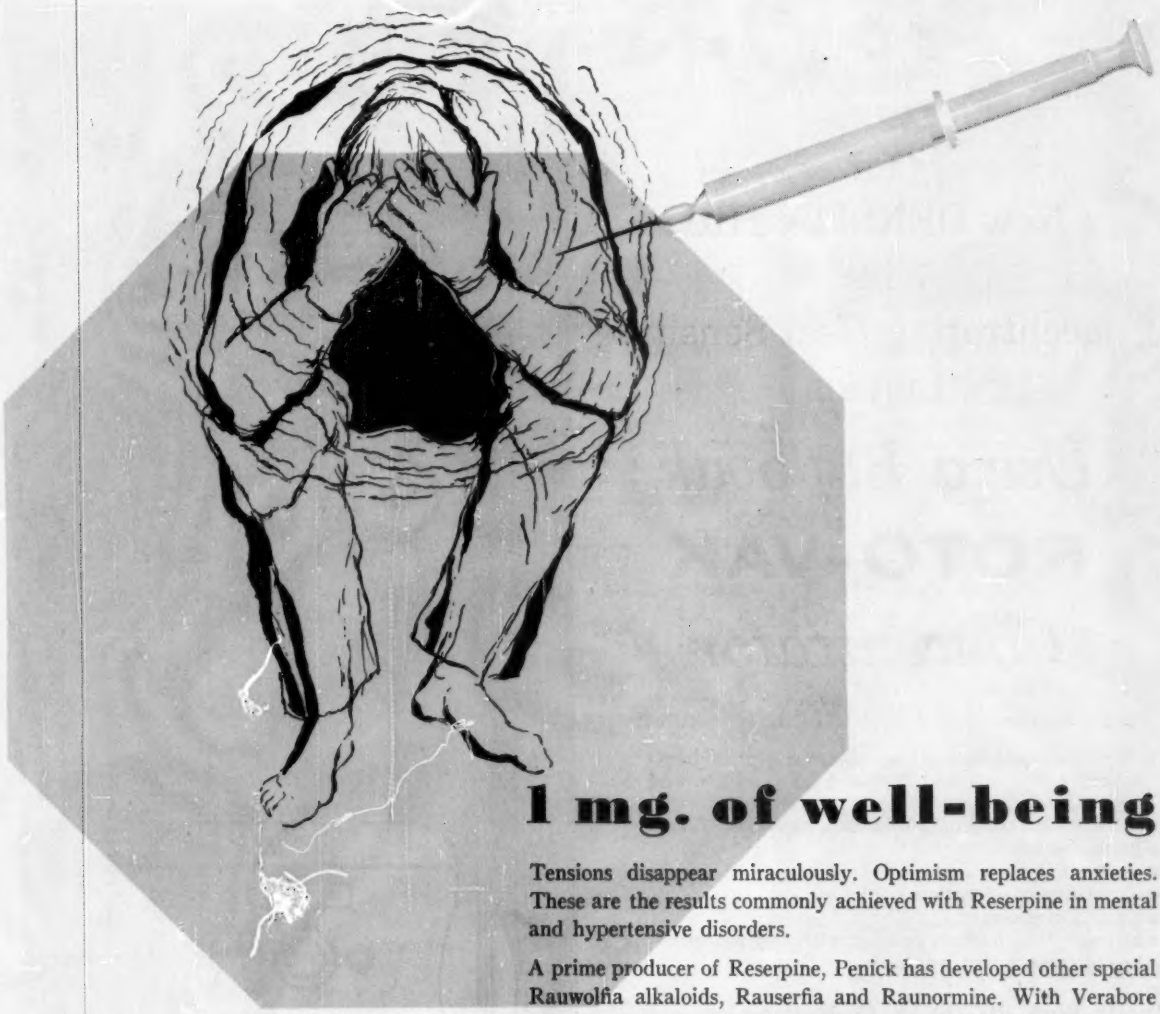

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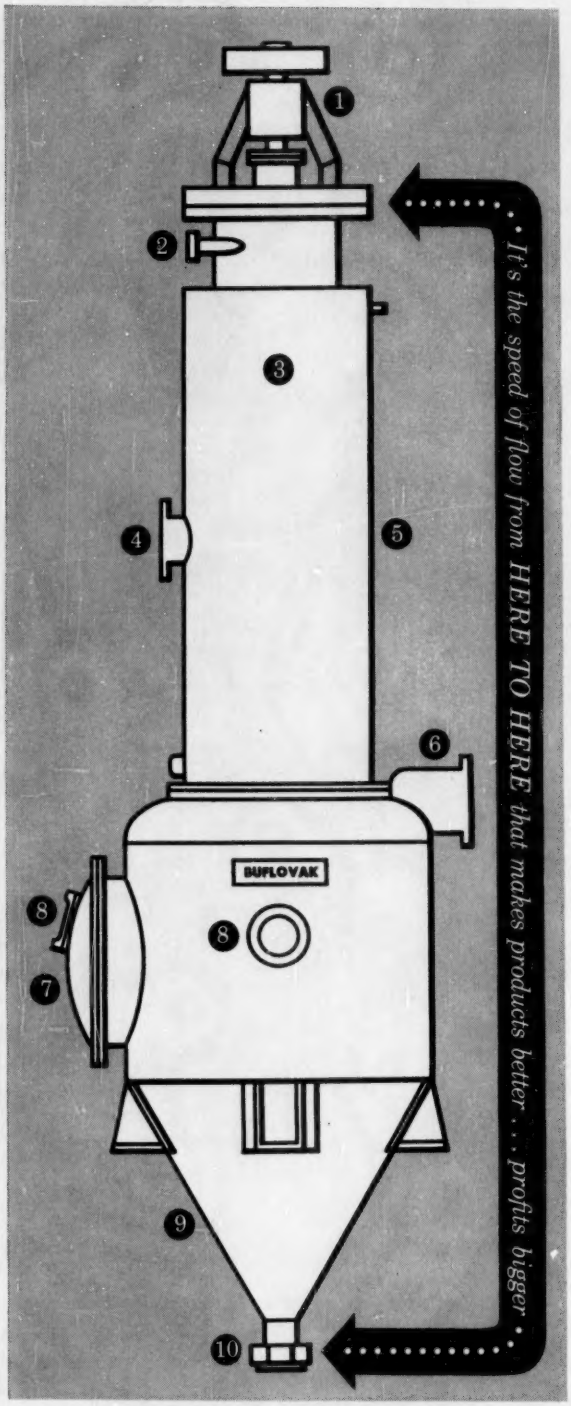
50th Anniversary
BLAW-KNOX
1906-1956

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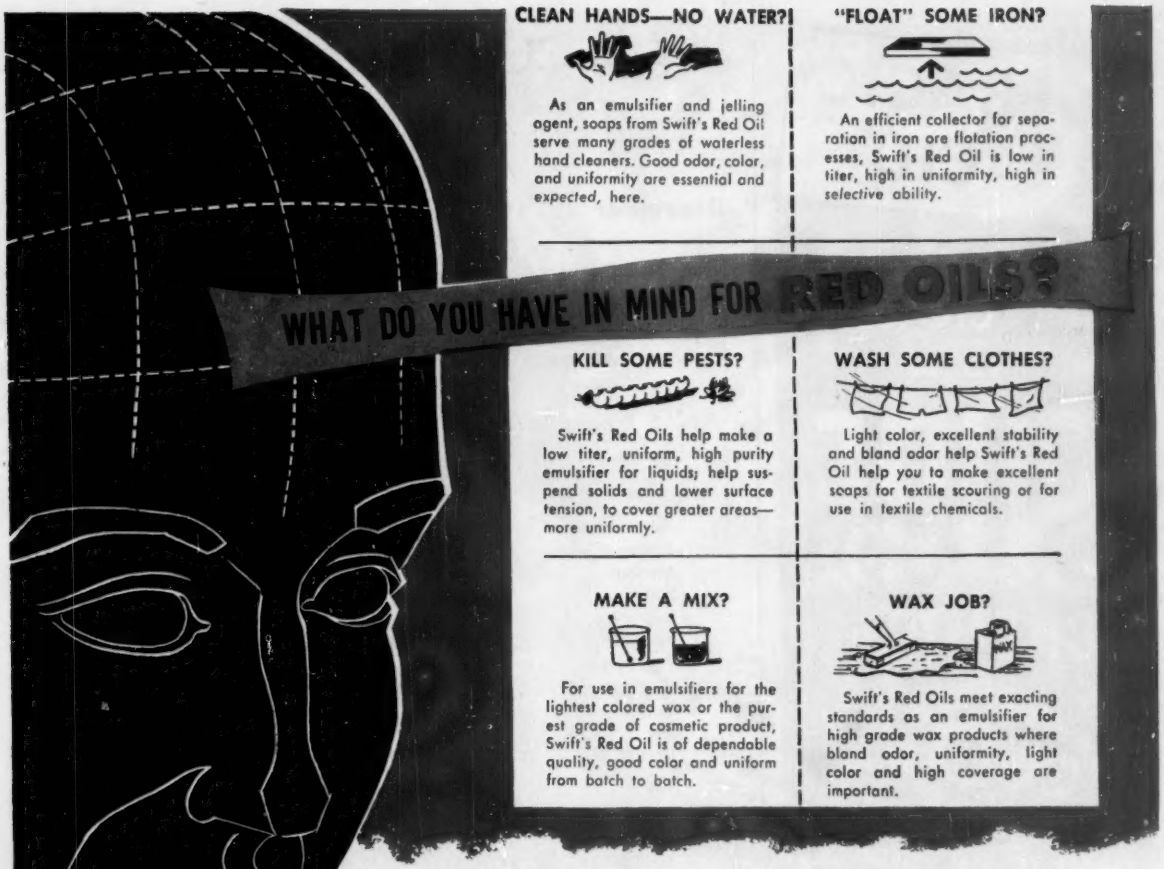
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■ The job which you have in mind, or in *work*, for Red Oil may bear but a family resemblance to those noted above—such is the point we wish to make.

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H-9

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Chemical Week

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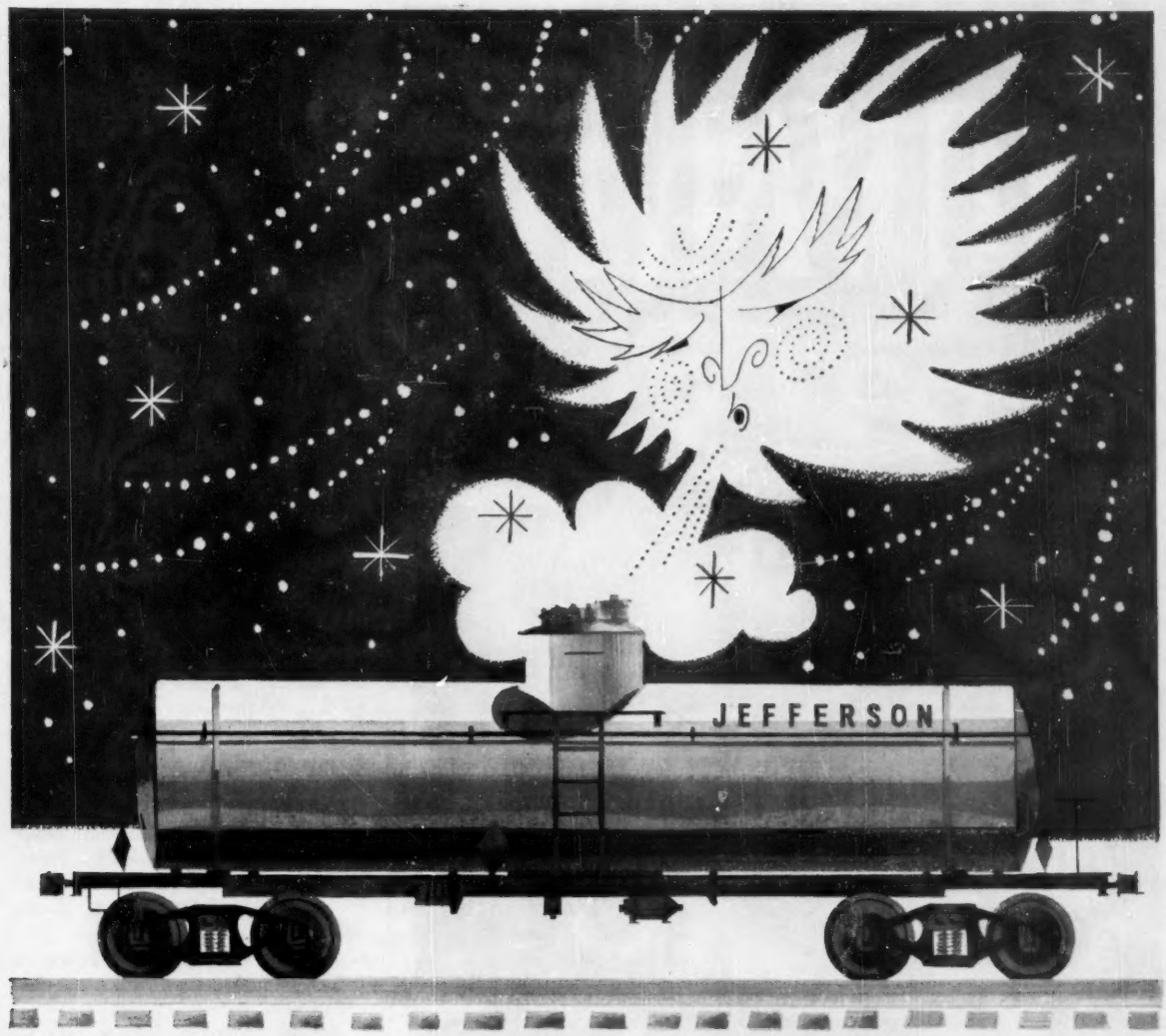


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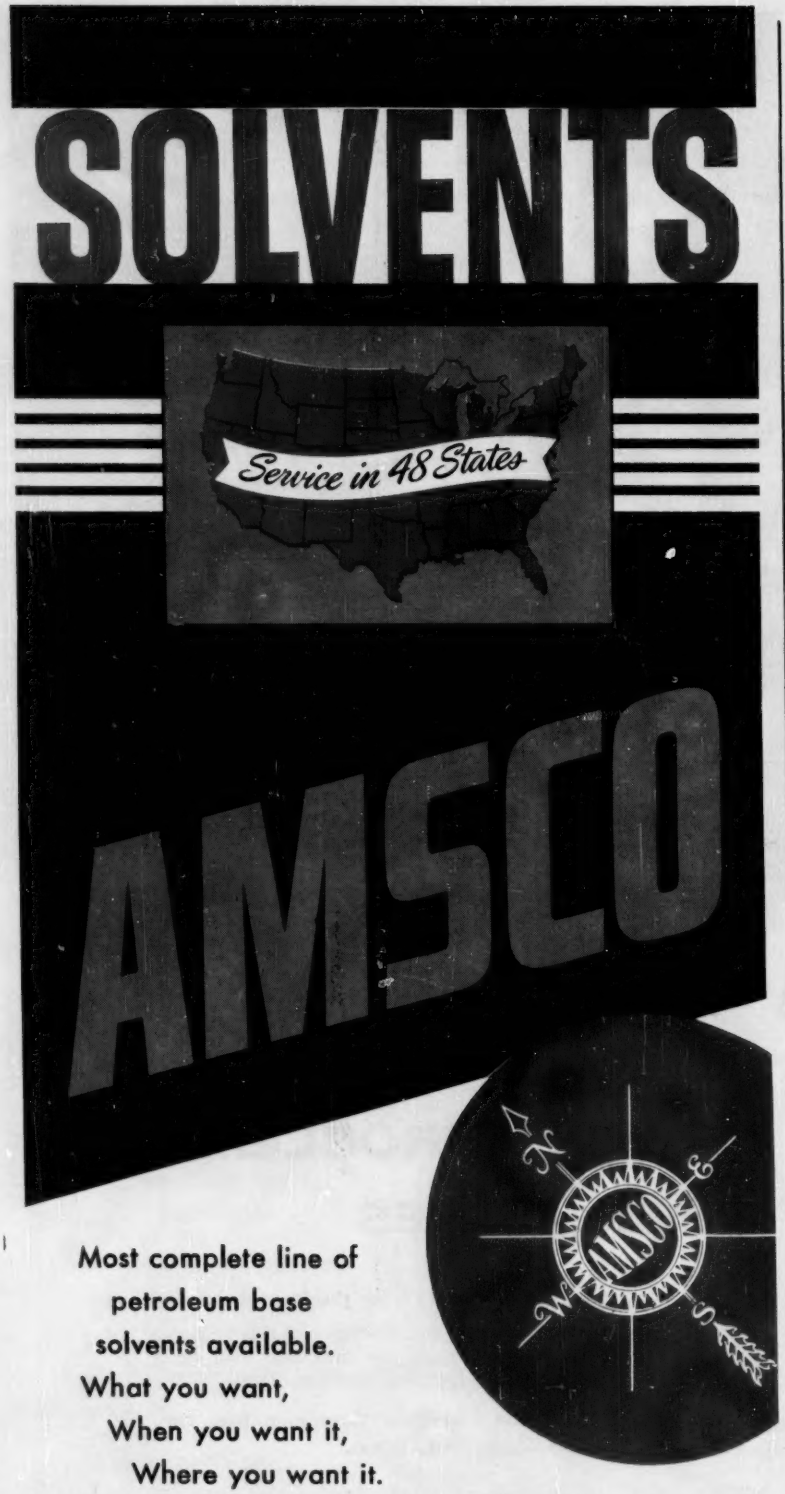


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# BEHIND THE NEWS

## Important Changes

CHEMICAL WEEK's masthead shows several important changes this week, and a lot of people are literally sitting in different chairs here on the 24th floor of the McGraw-Hill Building.

It all started when Ed Thompson, associate managing editor during the past year—and before that assistant editor on CHEMICAL ENGINEERING—moved about 40 ft. down the aisle into the Promotion Manager's office. He will handle advertising sales promotion for both magazines.

Ralph Schulz, who has also been associate managing editor this past year (and before that Research editor), is now managing editor. Bill Olcott, who, after two years in our Washington Bureau, rejoined *CW* last January to head up our general business news section (or, as we call it, the "Front-of-the-Book"), is now assistant managing editor.

Bob Warren, who has been Specialties editor, is now associate editor over Specialties and Business News. Dick Callahan, formerly assistant editor in Sales and Distribution, is now Specialties editor; and Cooper McCarthy, formerly assistant editor in Business News, now heads up that department.

We are indeed pleased to give all of these men well-deserved promotions; and in their new spots they'll continue to make CHEMICAL WEEK as timely and useful as possible.

**Howard C. E. Johnson**
**Editor**

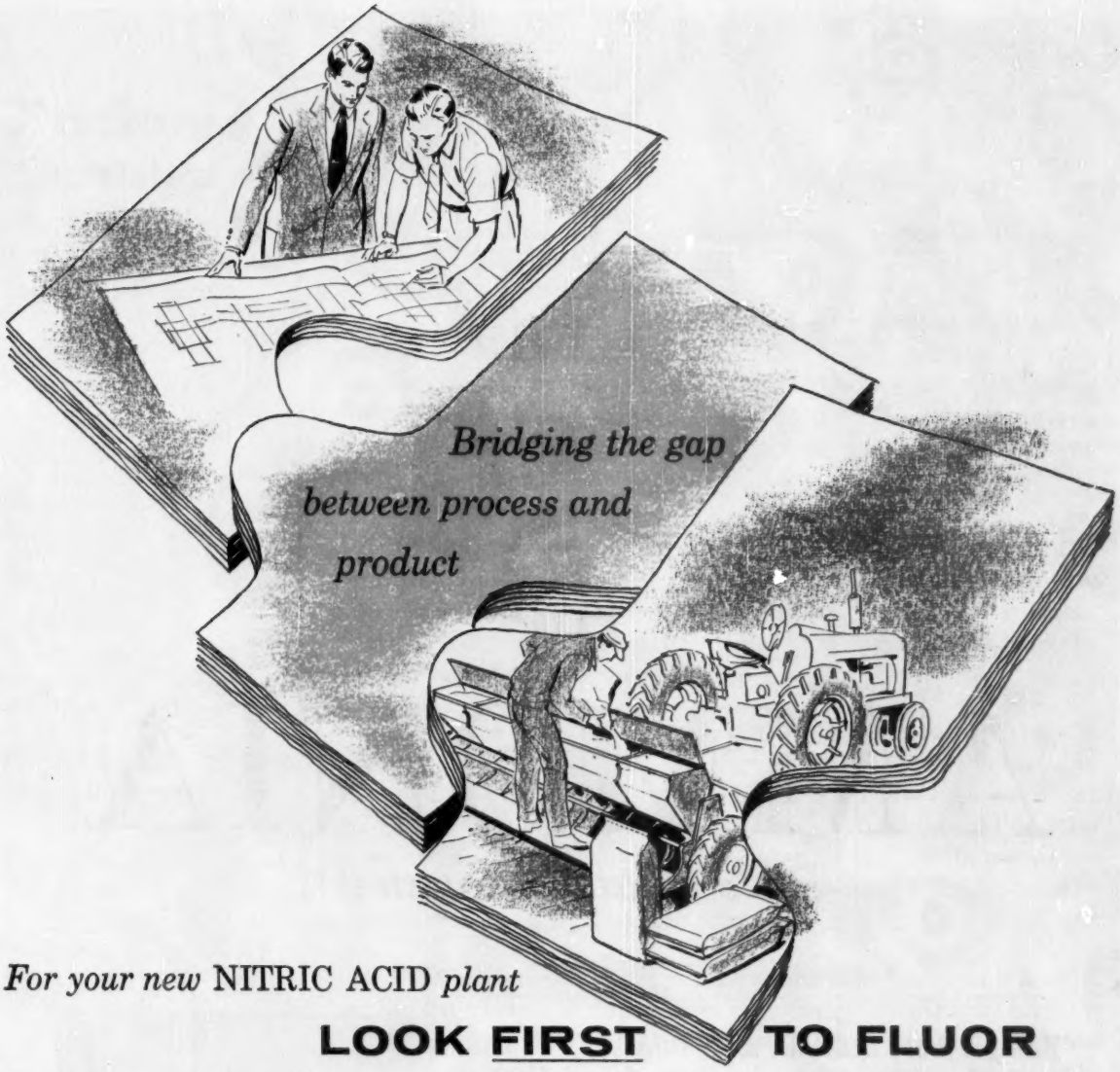
# MEETINGS

**Society of Plastics Engineers,** annual technical conference. Sheraton-Jefferson Hotel, St. Louis, Mo., Jan. 16-18.

**Assn. of American Soap and Glycerine** Producers, annual convention. Waldorf-Astoria Hotel, New York, Jan. 23-25.

**Texas A&M College,** 12th annual symposium on instrumentation for the process industries, College Station, Tex., Jan. 23-25.

**Chemical Buyers' Group—National Assn. of Purchasing Agents,** midwinter meetings, Western division, Congress Hotel, Chicago, Jan. 24; Eastern meeting, Hotel Commodore, Jan 29.

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# Business Newsletter

CHEMICAL WEEK
December 29, 1956

**Natural gas—its price, availability and suppliers**—continues to be a hot topic for chemical process firms.

**Certification of the Florida natural gas pipeline** seems sure this week. The Federal Power Commission heard oral arguments on the 953-mile line proposed by Houston Texas Gas & Oil Corp. last week, and—providing certain modifications suggested by the FPC staff are made—approval is virtually certain. The line, stretching from Baton Rouge to Miami, is important to some nine chemical firms that operate or are building in Florida (*CW, Dec. 1, p. 21*).

FPC's staff did recommend that the line be disapproved. But this disapproval was based on several technical objections to Houtex's plans. Revision of the plan will likely bring FPC approval. (Objections concerned financing of the line, distribution of the gas in Florida, and the type and capacity of equipment planned.)

**At the opposite end of the U.S.,** the El Paso Natural Gas Co. has received a go-ahead from FPC on plans to build new pipelines in California. The new program means 290 miles of new line, which can deliver 150 million cu. ft. of gas daily. But FPC also warned El Paso to present a definite supply program demonstrating how future system requirements are to be met. FPC figures El Paso won't be able to meet requirements of existing customers after 1958.

**The Arkansas Public Service Commission has taken a hand** in another gas matter—a dispute over industrial gas contracts. Arkansas Louisiana Gas Co. had sought approval of 268 new contracts with industrial users, through which, in return for a higher payment for gas, customers would be given priority for their gas needs. PSC suspended the contracts until it can hold public hearings on them. Hearings will begin April 8.

The suspension postpones settlement of a dispute between Reynolds Metals and Alcoa. Reynolds signed for priority service at the higher rate; Alcoa did not. In a complaint to Arkansas PSC, Alcoa claimed that Reynolds would illegally be getting preferred treatment.

•

**Reynolds can cheer an electric power decision.** The New York State Power Authority has just granted the firm 239,000 kilowatts of the power to be developed by the St. Lawrence seaway project. This is about one-third the total amount to be generated by projects under jurisdiction of the New York group.

In addition, Alcoa had been allotted an equal amount, and Niagara-Mohawk Power Co. will receive 115,000 kw. The power group was split 3 to 2 on both the Reynolds and Niagara decisions; a further dispute on these allocations seems likely.

**Union Carbide and Carbon formally acquires Visking Corp.** assets next week, now that the stockholders of the film and tube manufacturing firm have voted in a special meeting to okay the exchange of 2½ Visking shares for one of Carbide's. The exchange had already been approved by UCC directors.

The Visking meeting was a short one. Some 30 minutes after stockholders gathered in the office of Visking's attorney in Richmond, Va., they were on their way again. UCC, for stock worth some $100 million, gets a firm with net assets valued at $22,672,000, 1955 sales of $57,746,835, and net earnings of $5,078,558.

•

**Carbide isn't the only firm that's acquiring another company.** Dow Chemical has taken over the stock of Schwing Lumber and Shingle Co. (Plaquemine, La.) and also bought 50% of the stock of Productos Quimicas Mexicano, S. A. (the rest is owned by Mexican interests).

Dow plans to use the lands of the lumber company—some 60,000 acres in St. Martin, Iberia, and Assumption parishes—for oil and gas exploration. This acquisition is not far from the Plaquemine, La., site of Dow's previously announced $50-million building program.

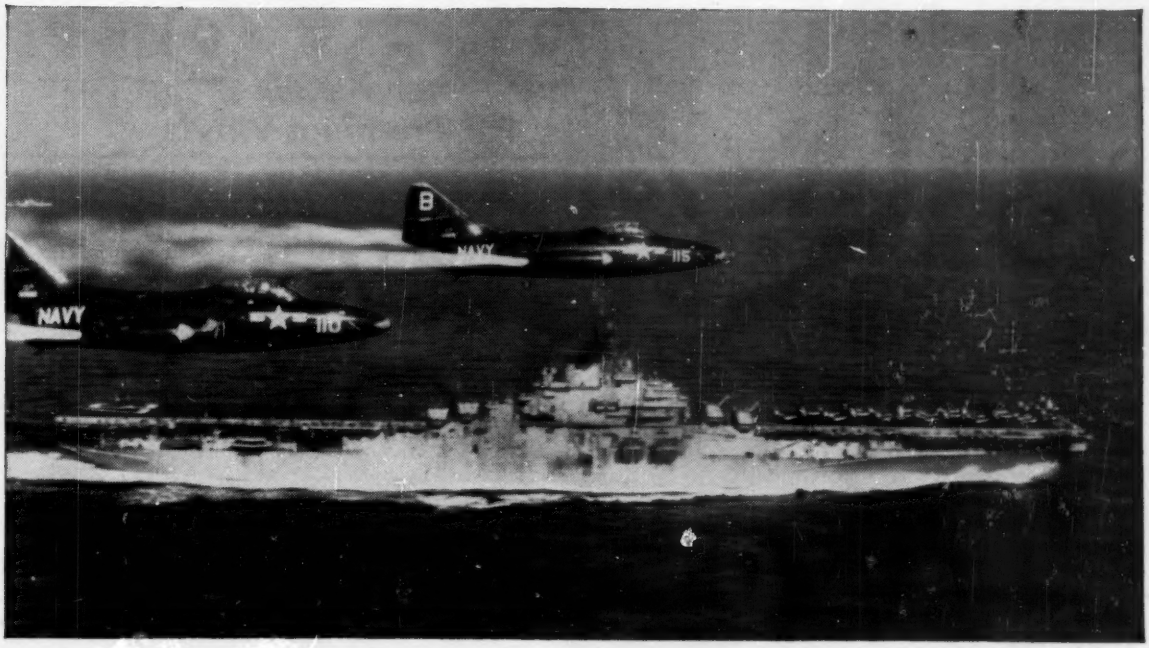
The Mexican firm, a chlorine/caustic soda producer, will double its capacity immediately, Dow says.

•

**Stockholders in merger-bound firms** will get a better look before they leap, if a proposed change in Securities & Exchange Commission rules goes into effect. The proposed change, which will be discussed in hearings that begin Jan. 17, involves SEC's Rule 133, the so-called "no sale" rule. Currently, securities offered for public sale must be registered with SEC, but registration is not required when an exchange of stocks occurs because of merger, consolidation, reclassification or transfer of assets. SEC feels this "has become an instrument of evasion of the law," wants to require registration and publication of a detailed prospectus.

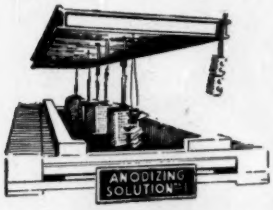
•

**Michigan Chemical Corp. has the money it wants for expansion.** Pennroad Corp., Websters Investors, Inc. and American Mfg. Co. have, as previously agreed (*CW, Sept. 22, p. 23*), bought 150,000 shares of Michigan common stock, thus providing the firm with $2.5 million for plant expansion. Michigan, which has long wanted to expand its facilities for brine-derived chemicals and rare earths, won't comment on reports that a plant is already under construction to produce the heavier rare earths under an Atomic Energy Commission contract. The firm has been devoting considerable time to rare earth production processes for the past two years.

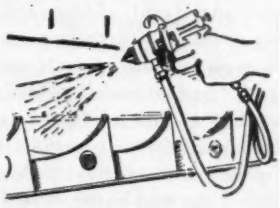



# CHROMIUM CHEMICALS IN ACTION

The useful life of modern jet aircraft has been appreciably prolonged through the application of effective corrosion inhibitors. Chromium Chemicals in various forms are used at many stages of jet plane production.




Anodizing aluminum alloy parts with chromic acid forms one of the most effective protective coatings known today. Furthermore, it is an excellent base for the customary zinc chromate primer. Steel and magnesium assemblies also are painted with zinc chromate... and before magnesium castings are primed they are dipped in a bichromate bath.



These illustrations are examples of the ability of Chromium Chemicals to inhibit and prevent corrosion. Besides supplying many industries with superior quality chromium chemicals, Mutual offers information on the numerous other ways that these chemicals help to protect valuable materials and equipment. So, if you are in doubt about the best way to solve your corrosion problem, contact Mutual.

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But no one plasticizer can meet all the requirements of vinyl processors. That's why Hercoflex 150 is just one of Hercules' family of Hercoflex plasticizers. Whatever you seek in a plasticizer, one member of this versatile group is sure to meet your specific requirements with "custom-made" precision.

If your files are not fully up-to-date on the Hercules plasticizers, write for the latest information. Or—if you have a specific problem, tell us your requirements, and we'll suggest the best answer based on our own experience.

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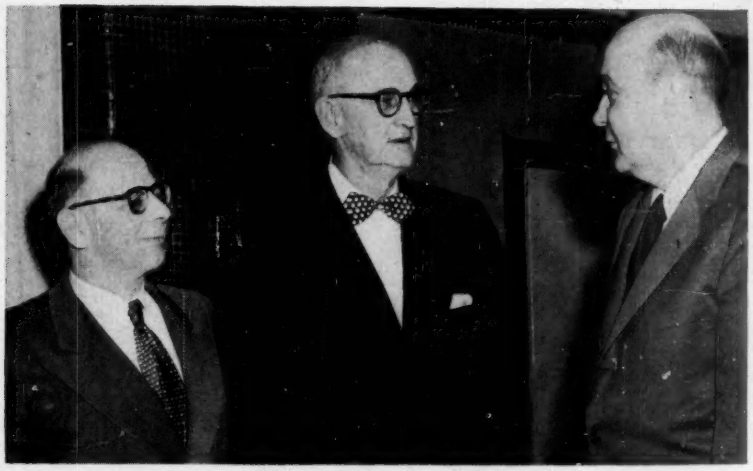


ICWU'S PRAGAN, MOFFETT, DONOVAN: Their quarrels mean . . .

# Labor Lull for Management

**Chemical firms**—which have been on the opposite side of the fence from the International Chemical Workers Union on various subjects—this week could count on a temporary breathing spell. Reason: The ICWU again is having internal trouble substantial enough to hamper its current negotiations for company-wide insurance and pension agreements.

This week, a scheduled meeting of the 11-member ICWU executive board was cancelled, President Edward Moffett reported, because "the majority of board members decided a meeting would not be necessary."

Apparently, however, cancellation was caused, in part, by reluctance on the part of Moffett—who leaves his post Dec. 31—to discuss his firing last week of long-time union education and research director Otto Pragan. President-elect Walter Mitchell, on the other hand, says his new board will meet as soon as possible after the first of the year, and that he'll do everything he can "to eliminate this and other injustices done by a lame-duck administration."

**Old Wounds:** Disputes among ICWU leaders are of long standing, and current bad feelings stem largely from previous issues.

Compounding disagreement is the insistent prodding by AFL-CIO Vice-President Walter Reuther to get ICWU and the Oil, Chemical and Atomic Workers union to merge — a move favored more by OCAW than by its sister union. Within ICWU itself, most of the support for the merger comes from the Mitchell supporters, including First Vice-President Joe Donovan, of Boston, who helped the Moffett forces in their 1954 victory. Capping the over-all picture is the fact that 7 of 11 members of incoming President Mitchell's new executive board (*CW, Oct. 20, p. 31*) now support Moffett.

**Less Militant:** Chemical industry employers can thus expect somewhat less union activity while these differences are being hashed over. Among other things, there will probably be less pressure for consummation of company-wide agreements, such as the projected pension-and-insurance pacts with American Cyanamid and with Sterling Drug, on which bargaining started some time ago.

Chemical management that's involved with the ICWU can look for less joint action with other unions. Too, there will be less support from ICWU headquarters in Akron for local unions' bargaining efforts, coupled with reduced efforts by ICWU to carry out organizing campaigns.

## Canadian Sulfur

**Canadian chemical circles** were buzzing last week over reports that Texas Gulf Sulphur Co. will build a plant to produce elemental sulfur adjacent to International Nickel Co.'s big smelter at Sudbury, Ont. Such reports were termed "premature" by Texas Gulf Vice-President Russell Wemple, who adds that the company has nothing to say at this time. It's reported in trade circles, however, that during engineering of Inco's Sudbury plant, Texas Gulf had considered plans for a pilot plant. A somewhat analogous operation for sulfuric acid is planned by Canadian Industries Ltd. (*CW, Dec. 22, p. 24*).

The new plant would be Texas Gulf's first venture in Canada, and its second production operation outside the U. S. The company, long assured of its position in U. S. sulfur manufacture, has only in the past few years begun development of non-domestic sulfur sources.

## Oil Firms Win Test

**Nine independent oil firms** have won another victory in their fight to stop the sale of Universal Oil Products Co. Last week, the Appellate Division of the New York Supreme Court upheld the decision of Judge Jacob Markowitz, who ruled that the independents had the right to argue at hearings to determine whether UOP can be sold under New York state law (*CW, Sept. 22, p. 22*).

Universal Oil is the major asset of the Petroleum Research Fund, a trust managed by Guaranty Trust Co., which wants to sell UOP in order to diversify the trust's holdings. Independent oil firms claim that sale of Universal may drive them out of business, since UOP's research services, now available to them, might be cut off if the firm were sold to a large petroleum concern. Other larger companies, which have their own research divisions, the smaller firms opine, would be the only ones still able to compete.

Attorneys for both sides indicate that Guaranty won't appeal the decision further.

**SEC'S ARMSTRONG: He spearheads his agency's assault against fraudulent stock issues. In the East, he's aided by . . .**

# Sales of New 'Wonder Metal' Stocks Bring

**The old "con" game of selling almost worthless stocks is spreading from uranium and oil securities to such new "wonder metals" as lithium, zirconium, and boron.**

And chemical process management is more than slightly affected: it's tough enough to develop company resources in any case; but competition from "phoney" stock offerings can make stock selling more difficult for small but legitimate concerns.

Evidence of swindle comes from the federal government's Securities & Exchange Commission's stock investigations now under way. But the doubtful chemical stocks that lack valid U.S. stock registration, like their uranium and oil counterparts, says SEC, are far outnumbered by legitimate issues with legal registrations.

Latest to be flushed out by Commissioner Sinclair Armstrong's watchdogs is the Lithium Metal Reduction Corp. It's now the subject of hearings to decide if its exemption from SEC's Regulation A was permanently suspended. This regulation, among other things, exempts a firm floating a stock or bond issue that would raise no more than $300,000 from having to file a detailed prospectus with SEC.

Also currently facing court battles are the promoters of the well known Great Sweet Grass-Kroy Oil stock issue, which is still being traded in Canada at about $1/share, and those who sell Vanura Uranium Inc. (Moab, Utah) stock. Others—including the promoters of a "miracle" fertilizer stock—are under investigation.

**Stock Cellars:** All these companies allegedly had their stock sold via the "boiler room" technique. Promoters often use shabby low-rent offices, crammed with telephones, manned by smooth-talking salesmen making their pitches to prospective investors amid a steady din (like that in a boiler room with furnaces going full blast—hence the term "boiler-room operation").

Evidence of the frenzied efforts to promote these illegal deals is found in the clutter of telephone books, hastily scribbled phone numbers, liquor bottles and tangled phone wires strewn all over the room (*see cut, right*), once such an effort is stopped.

**Who'll Take Stock?** Potential buyers include just about anyone—not just the stereotyped, open-jawed "sucker." Paul J. Windels, SEC's New York administrator, says that engineers, pro-

INDELS, who polices New York metropolitan area, the nation's worst trouble spot.

## Threats of Federal Action

PHOTOS BY GLORIA DEAN

AFTER THE RAID: Hasty retreat leaves 'boiler room' clutter.

fessional people and business executives are high on the list of persons who have been "taken."

Windels cites these reasons why normally cautious people would buy such stocks: the expanding economy, the desire of people—who have more money these days—to "get in on the high profits." But most important, he says, is the illegal brokers' experience as "confidence men" capable of bilking almost anyone who will listen to them.

Once they're "hooked," victims frequently end up buying several hundreds, perhaps thousands, of dollars worth of stock under the skillful probing of the "reload" men, who follow up the original pitchman by wooing the victims as the stock prices move up. What victims don't know, however, is that prices of the stocks are usually being forced up by promoters who buy and sell huge blocks of shares to manipulate the value. After the "killing" is made, promoters disappear.

**Loophole Survival:** How do "boiler room" operations manage to survive? In spite of many strict regulations laid down by SEC, says Windels, stock swindlers have found many legal dodges and loopholes.

Among the biggest hurdles for investigators are regulations such as those in Switzerland, Canada and Lichtenstein that make it unlawful to reveal certain information about trusts or corporations. Hiding behind this technicality, promoters falsely tell prospects they've sold large blocks of stock to banks and brokers there.

Another legal technicality swindlers depend on is SEC's Regulation A provision that private placements of stock worth more than $300,000 need not be registered. To avoid such registry, promoters describe many of their transactions as private placements.

There are other equally roundabout devices being used. Each is complicated and each seeks to make it as difficult as possible to trace the origin of an illegal issue. But, Windels emphasizes, SEC is launching its counterattack.

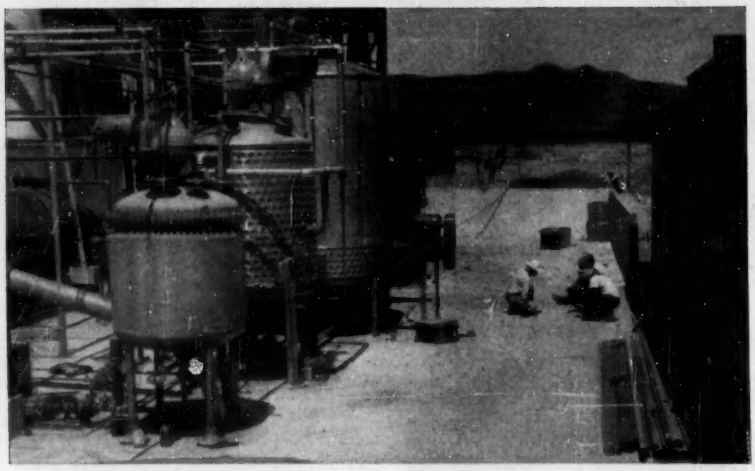
And, as the commission continues to check new issues, to propose new loophole-tightening legislation and to track down the persons behind stock swindles, chemical process management looks to the end of dilution of integrity of its own legitimate stock offerings.

**EXTRA FAST DELIVERY**
**of *standard* Pfaudler glassed reactors now!**

# Pfaudler

*Pfaudler Corrosioneering News Published by The Pfaudler Co., Rochester, N.Y.*

## Pfaudler helps Felva set up new Mexican detergent plant



THE HEART OF FELVA'S PLANT. Pfaudler equipment lined up here (left to right) consists of a 300-gallon sulfonator, 1000-gallon neutralizer, and a 3000-gallon slurry storage tank. A side-entering mixer keeps the slurry in motion. The pipe-like equipment slanting off to the left of the sulfonator is a Pfaudler heat exchanger. And on the extreme left is a partial view of the stainless cooler. Some of this equipment must withstand the highly corrosive effects of oleum. Pfaudler glassed steel and alloy equipment prove equal to the task.

Productos Quimicos Felva—synthetic detergent manufacturer of Hermosilla—began operations in June. The event culminated a two-year program of planning and building.

To our southern neighbors, the event was especially significant. Felva's plant represents only the second of its type to be owned wholly by Mexicans. To you it most likely represents the kind of contribution corrosioneering makes to the processing industries.

Here's what Pfaudler's project engineers did for Felva: They furnished complete installation instructions including site preparation, general layout, and piping drawings—together with some of the electrical drawings. They furnished specifications for the concrete and suggestions for Felva to use in negotiating plant construction contracts. They furnished on-the-spot aid during the erection and start-up stages. And one of Pfaudler's engineers even prepared design sketches of a water spray cooler, railroad tank car unloading platform, and other appurtenances to the plant—even though these were not the responsibility of *The Pfaudler Co.!*

That's the kind of engineering service you can get from Pfaudler's project engineers. Skilled in the corrosioneering of all types of processing equipment, they're well qualified to help you with *your* processing problems.

To learn more about this unique service, contact your nearest Pfaudler representative. Or mail the coupon and receive your copy of the "Buyer's Guide."

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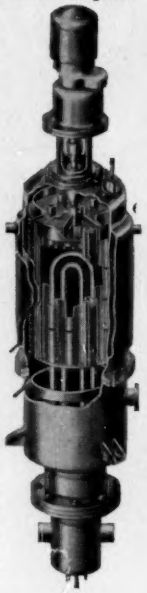
You can test your own product—and in that way uncover areas of greater profit—with Pfaudler's new wiped-film evaporator for vacuum distillation.

*A floating carbon blade* cleanly wipes the peripheral evaporating surface to promote a very thin film and turbulence—creating higher heat transfer rates and faster evaporation.

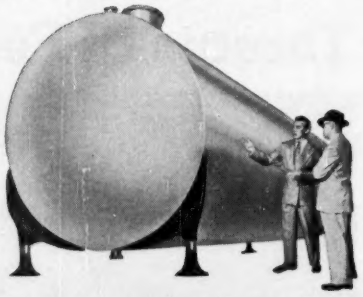
Two models are available now: a two-inch laboratory evaporator and a 12-inch pilot plant unit. For more information, contact your Pfaudler representative.



*Right* — Twelve inch pilot plant evaporator. Vacuums to 0.1 mm or lower; temperatures up to 700° F.; very high capacities.

### CHEMSTOR spells low-cost storage

***New vertical design added to line***



Store your product in inexpensive Chemstor tanks—the glassed steel tanks that cost only 25 cents per gallon of capacity in the larger sizes. Size range is 750 to 35,000 gallons. You get the corrosion resistance of glass *plus* the working strength of steel. Nothing beats glassed steel for keeping your product free from contamination. Chemstor tanks are easy to clean—almost nothing sticks to glass!

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### Pfaudler Annual Report available

Our fiscal year—a highly successful one—ended May 31. A report of Pfaudler's activities during that year is now available to those of you who share our interest in Pfaudler's progress.

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# Corrosioneering News

Quick facts about services and equipment available to help you reduce corrosion and processing costs.

## How to cut time *and* cost of your centrifuging

It's no longer necessary for your centrifuging to be an expensive and time-consuming "batch" type operation.

With a Titan Superjector Centrifuge, you get:

- *continuous* removal of solids from one or two liquids
- *continuous* concentration of solids by removal of liquid from slurries—and discharge of solids in a pre-determined dry state.

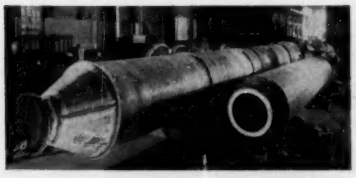
While rotating at full speed, the Superjector discharges solids deposited within the centrifugal bowl and *thus cleans itself*. You benefit from reduced labor costs, increased production, and improved product!

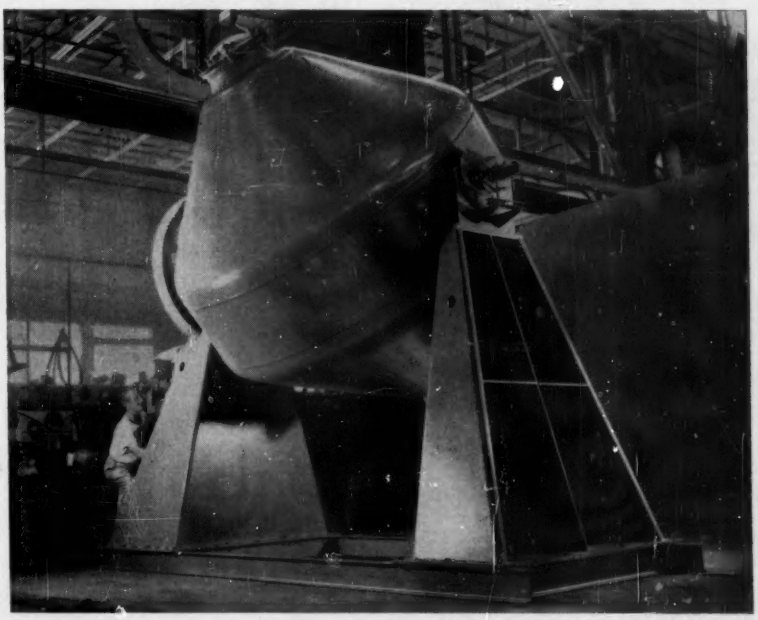
Once you see the uniqueness of its design, you'll understand just how economical and time-saving the Titan Superjector can be. Bulletin 930 gives you full details.

## Nickel-clad columns

Here are two nickel-clad columns designed for petrochemical service. The unit on the left is 46 feet long, the other 56 feet. Pfaudler's experience with both glassed steel *and* alloy columns qualify our engineers as impartial assistants to you in *your* column selection problems. Make doubly sure you order the *right* column by checking with us before you buy.

Send for Bulletin 940 and Data Sheet No. 25.





## Big new conical dryer-blender speed-dries 165-cubic-foot batch!

Now you can speed-dry larger batches of highly corrosive products than ever before. The enormous working capacity of this giant dryer-blender permits fast drying of up to 165 cubic feet of material.

You get more than just a *dryer* with the Pfaudler unit—you get a dryer-*blender* that offers these important benefits:

- **Higher Heat Transfer** through uniformly narrow jacket space.
- **Lower Power Requirements** because units of this design are unencumbered by "extra" water in the jacket.
- **Improved Heat Transfer** due to the much greater *jacket surface area* than you'll find in other units.
- **Corrosion Resistance** of acid-alkali-resistant glassed steel.
- **Even Drying *and* Blending** produced by established method of *proper* tumbling.

You'll enjoy all these benefits with any Pfaudler conical dryer-blender. Exclusive features of the big new *eight-foot* dryer-blender include 1) lubricated stuffing box, 2) gear-driven unit, 3) 15-hp. explosion-proof motor *with magnetic brake*, and 4) *pre-formed* stand.

On the right is a close-up view of the new drive unit. There's no possibility of "bucket rolling" with this unit because of the new magnetic brake. Normally turning at eight rpm, the bucket alone—fully charged—weighs ten tons!

Learn more about this unique dryer-blender. Mail the coupon and receive without obligation your copy of Data Sheet 26.

**THE PFAUDLER CO., Dept. CW-12, Rochester 3, N. Y.**

Please send me: ☐ Buyer's Guide. ☐ Pfaudler 1956 Annual Report. ☐ Bulletin 918—Pfaudler Chemstor Tanks. ☐ Bulletin 930—The Titan Superjector. ☐ Bulletin 940—Columns *Glassed Steel & Alloy*. ☐ Pfaudler Data Sheet 25—Columns. ☐ Pfaudler Data Sheet 26—Dryer-blenders.

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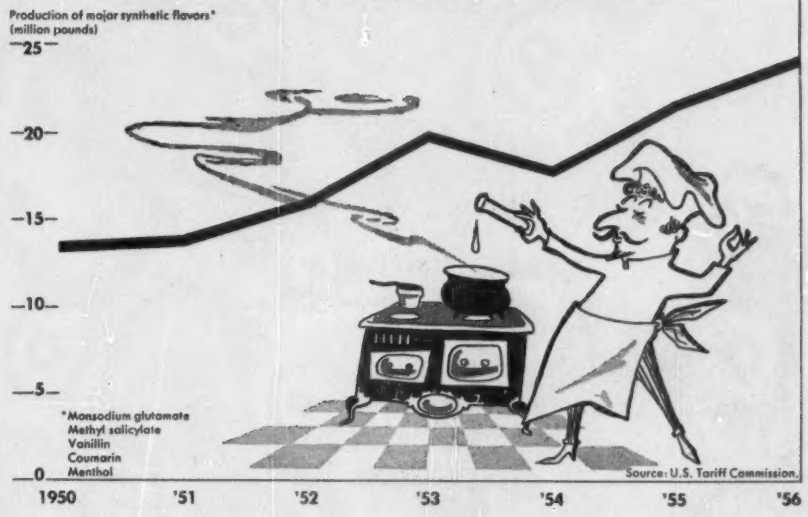
# Charting Business

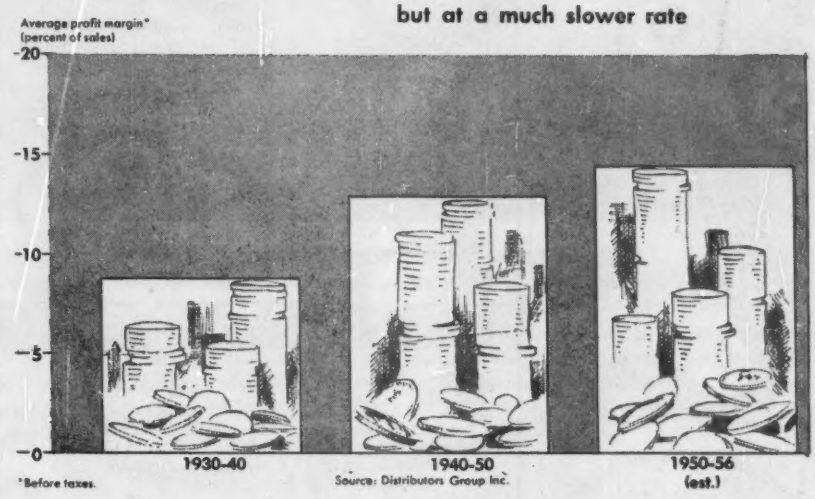
CHEMICAL WEEK
December 29, 1956

## U. S. Taste Buds Help Boost Synthetic Flavor Production




SYNTHETIC flavors, one of the less-publicized groups of organic chemicals, are important raw materials for manufacturers of soft drinks, confectionery, dentifrices and mouthwashes, cigarettes—to name the major groups. This year, total production of the major synthetic flavors should reach about 24 million lbs. The breakdown: monosodium glutamate, 18 million lbs.; methyl salicylate, 3.5 million lbs.; vanillin, 1.5 million lbs.; menthol, 0.5 million lbs.; coumarin, 0.4 million lbs. (mainly for perfumes; FDA barred it from food).

## Chemical profits continue, but at a much slower rate



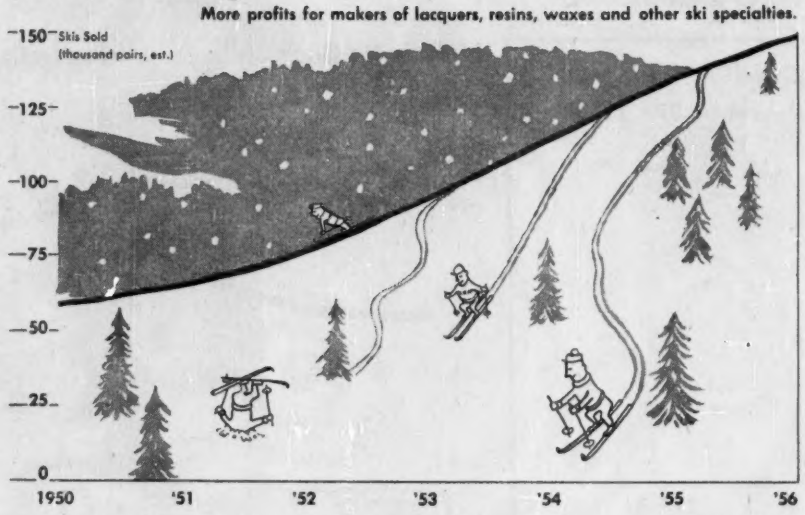

THE chemical industry is slated to spend 29% more for expansion in the coming year than was spent in '56—$1.9 billion, compared with $1.5 billion. There's some question whether anticipated profits warrant this substantial hike in expenditure, in the face of slipping profit margins (profit as a percent of total sales). Though profits have steadily increased over recent years, rate of growth of profit margins has been noticeably decreasing.

# Charting Business

(Continued)

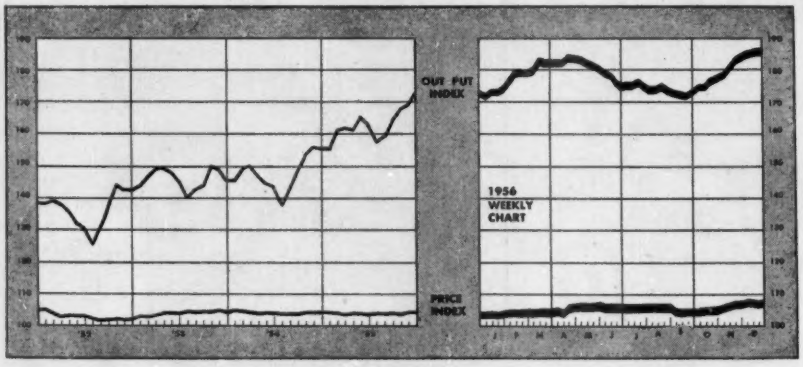
## Ski Sales Climbing

More profits for makers of lacquers, resins, waxes and other ski specialties.



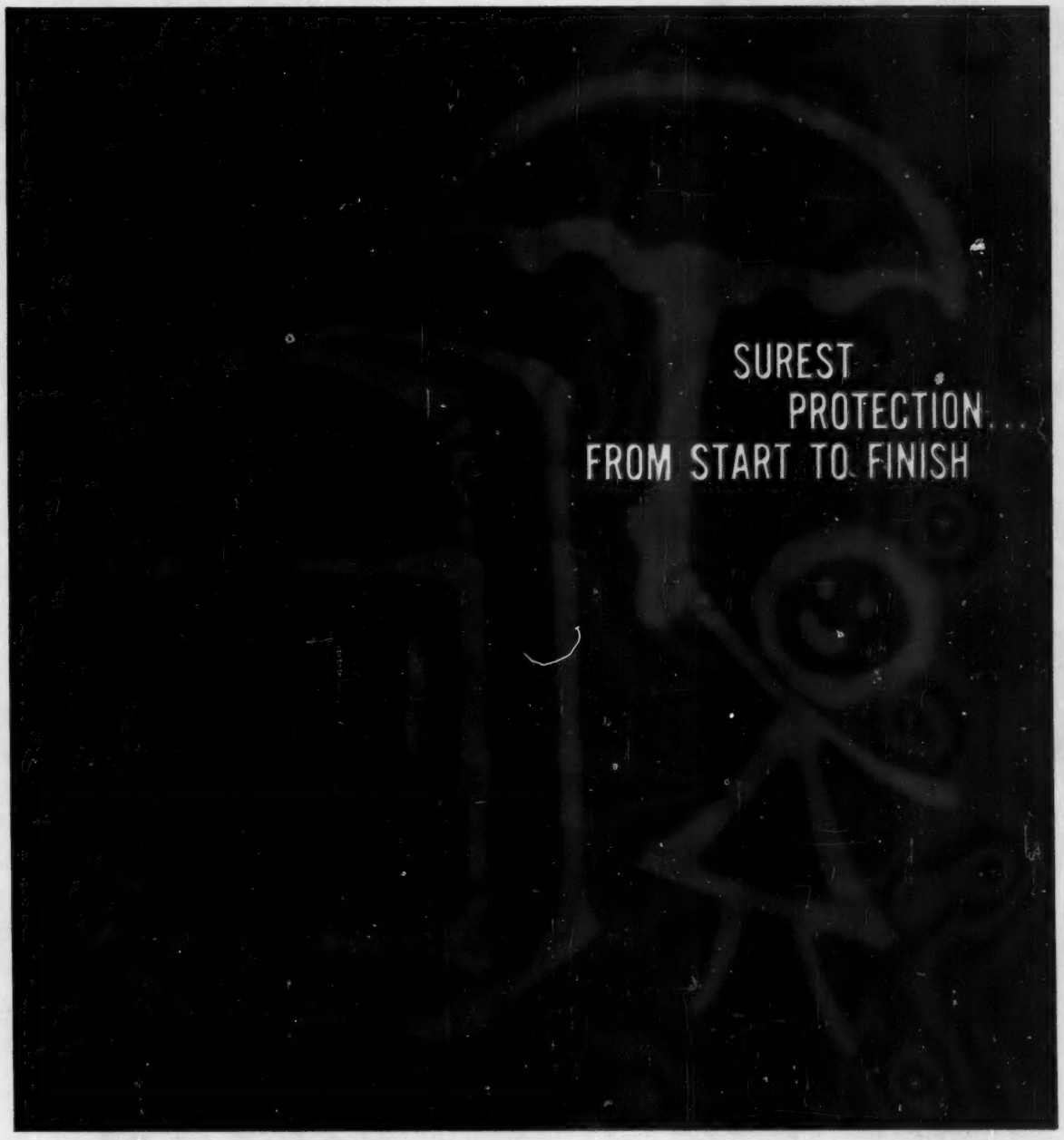

BOOMING ski sales provide a profitable, though small, outlet for chemical process industries' products. During the '56-'57 season, more than 25,000 pairs of laminated metal skis will be sold. Each pair consumes 3 lbs. of phenolic laminate, 1 qt. of thermosetting adhesives, plus small quantities of other chemicals. Plastic-bottom skis—of which about 75,000 pairs will be sold this winter—require about half of these amounts, in addition to the basic plastic material. The ski industry will also use about 50,000 lbs. of petroleum and vegetable waxes, 8,000 lbs. of pitches and resins, 4,000 gal. of lacquers and varnishes.

## BUSINESS INDICATORS




| WEEKLY | Latest Week | Preceding Week | Year Ago |
|---|---|---|---|
| **Chemical Week** Output Index (1947-49=100) | 187.1 | 186.5 | 173.1 |
| **Chemical Week** Wholesale Price Index (1947=100) | 107.3 | 107.5 | 104.8 |
| Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.) | 434.6 | 426.0 | 475.4 |

| MONTHLY | Manufacturers' Sales | | | Manufacturers' Inventories | | |
|---|---|---|---|---|---|---|
| Trade (million dollars) | Latest Month | Preceding Month | Year Ago | Latest Month | Preceding Month | Year Ago |
| All manufacturing | 28,235 | 27,624 | 26,637 | 50,737 | 50,106 | 45,356 |
| Chemicals and allied products | 2,059 | 2,031 | 1,939 | 3,734 | 3,714 | 2,190 |
| Petroleum and coal products | 2,585 | 2,520 | 2,339 | 3,176 | 3,133 | 2,824 |

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'57 Forecast

# The Chemical Process Industries: 1957

**Next year,** the chemical industry should go through the best year of its life. Sales and production will reach all-time highs. Pretax profits will climb. And it will be a year of technological progress.

But progress begets problems, and the industry will have its share of those. Profits after taxes will probably not keep pace with the increase in sales. Costs of labor, shipping and equipment are going to go up, so industry will have to raise prices. Money has been tight for some time and there's no sign that it's going to get any looser. The same is true for certain types of steel and for skilled manpower.

## Economic Trends

**The country's** gross national product—the basic reckoning figure—should reach $435 billion next year, compared with $410 billion this year. Some of this will be inflation. Some will represent a growth in services for consumers. But industrial production itself will go up. For instance, 1956 production as measured by the Federal Reserve Board Index was up 43% over the base period of 1947-49. In 1957, it should be 47% above that of 1947-49.

Chances are, too, that 1957 will get better as it goes along, and the fourth quarter should be the best of all.

Under those assumptions, the chemical industry should increase its sales by about 10%—from $23.3 billion in 1956 to $25.5 billion next year. That should translate to a pretax profit of about $3.1 billion, a 5% increase over the $2.95 billion net of 1956. But the after-tax margin —6.7% this year—may drop to 6.2%.

What will the squeeze on profits mean to the financing of new expansions? It could mean a lot. There's some feeling that the financial world is becoming disenchanted with chemical stocks as a whole, feels that some larger companies may be near the point of diminishing return on new investment.

Actually, what is happening is that financial men are merely becoming more selective. The word "chemical" alone is not enough to attract them. They're not so interested in the low-cost, low-profit-margin items. But they're still eager to invest in the more glamorous chemicals.

## Pressures at Work

**Mergers** have done much to recast the chemical industry. It now seems that medium-sized chemical companies (with $25-100 million in annual sales) are most likely to show spectacular growth for the next decade (although the firms just below that level won't lag far behind).

And many of the companies whose sales fall in that range have already been acquired by bigger ones. In fact, one of the major complaints of business brokers and others who "find" small firms for larger ones is that they're getting harder and harder to find.

The federal government will also act as a depressant on mergers—antitrust suits have become more and more routine as follow-ups to mergers.

Another potential block is proposed legislation to require firms to give the government 90-day notice before consummating a merger. It received strong support last year, and stands a good chance of passage by Congress next year.

But probably the most important development to watch in this respect is the outcome of the long-proposed merger of steelmakers Bethlehem and Youngstown. Their deci-

**SALES** **Chemical industry sales should jump about 10%—to $25.5 billion.**

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sion to go ahead in the face of disapproval by Attorney General Brownell should set the pattern for future mergers, once the current antitrust suit is settled.

**Trade and Tariff:** The government's trade policies, too, will have a heavy impact on the chemical industry next year and in years to come.

Two trade and tariff matters in particular will stand out next year: whether current U.S. laws to prevent foreign countries from "dumping" their goods here, and whether the U.S. should join an international trade group, the Organization for Trade Cooperation.

Odds are good that the regulations to prevent dumping will be given more muscles.

But it's likely that the U.S. will sit out OTC unless the Eisenhower Administration makes an all-out effort to enlist support for joining it.

If the U.S. does not join up, the Europeans may go ahead with plans—now being laid—to establish a common European market for manufactured goods. If they do, the U.S. would lose most of its market (primarily to the Germans) in countries that are discussing the organization. And those countries are currently taking well over 20% of U.S. exports.

## Supply and Demand

**Chemical companies** started raising prices in earnest during the fourth quarter. And they'll continue next year, mostly in an effort to maintain profit levels.

At least one major producer of chemicals flatly predicts that three out of four price changes made during the year will be upwards.

Chemical output, which is now rolling along at 90-95% capacity, may fall off slightly after the first of the year. In general, supply of just about every commodity will be adequate, with perhaps a few sectional dislocations.

There will be, in fact, an overabundance of some items. The near-glut condition in ammonia, for instance, is expected to hold right through 1958.

Insecticide and other agricultural chemical sales will depend in great part on weather conditions throughout the country. But it's a cinch that there'll be more than enough to fulfill all demands.

High-pressure polyethylene capacity, now at more than 600 million lbs./year, will jump again in 1957, to nearly 740 million. In addition, there will be almost 250-million-lbs. annual capacity of low-pressure polyethylene coming in during the year. Since sales are already lagging some 150 million lbs./year behind capacity, there will be further price concessions until demand catches up.

Styrene monomer consumption is due to rise. Contributing to this: the recently negotiated multimillion-pound contracts that will give the rubber companies and other "big time" users a drastically slashed price—12¢/lb. for rubber-grade material.

Synthetic rubber production, which dipped somewhat during 1956 will rebound to hit new records in 1957. That will mean a bigger call for acetic acid, anhydride and methyl chloride. Additional capacity for butadiene due in in 1957 should help fill the existing gap between supply and demand.

On the other hand, more acetone will probably be just a little too much of a good thing and result in one of the few price reductions during the year.

Don't expect to see any shortages, either, in any of the important industrial acids: sulfuric, phosphoric, hydrochloric or nitric. Supply of these over the past few months has exceeded demand in some areas (due to the easing in demand by rayon and fertilizer producers). With several new plants in production and at least one more under construction, the supply of sulfuric may reach more worrisome levels during 1957.

Demand for soda ash, caustic and chlorine has been picking up and this trend should continue through next year. Alum sales outlook is bright, particularly in Louisiana and Arkansas, where a number of new paper mills are being built.

Supply and demand should balance, for the near future at least, on glycerine, benzene, chlorinated hydrocarbons, sodium silicofluoride and formaldehyde, among others. Look for an easing in phthalic anhydride, some plasticizers, toluene and naphthalene.

Anticipated movement in hard goods (automobiles, refrigerators, etc.) will jog sales of chemicals that go into coatings. If detergents continue to expand as expected, shortages may be encountered in fats and oils before the end of the year.

## The Building Boom & Household Chemicals

**Look for an increase** in the market for household specialty chemicals. In 1957, more than a million new dwellings representing an expenditure of over $12 billion

**Profits** **Pretax profits should rise 5%; after tax margin may drop 0.5% to 6.2%.**

**Demand** **Enough of just about every commodity to balance supply/demand.**

will be added to the U.S. countryside. Although it's a drop from previous years, this represents a sizable number of homes that will need paints, floor finishes and chemical specialty items of all sorts.

Recent studies by the U.S. Dept. of Commerce indicate that the yearly expenditure for these chemicals (mainly cleaning and polishing compounds) has risen substantially. They went up from $1,532 million in 1952 to $1,747 million in 1955. There is little doubt that '56 and '57 will show even more impressive figures.

Other specialties used around the home have been showing comparable growth. The amount spent on drugs and sundries went from $1,569 million in '52 to $1,747 million in 1955. Similarly, money spent for toilet articles climbed from $1,569 in 1952 to $1,578 in 1955.

There's little likelihood that 1957 will bring any marked slump in these expenditures, though it may be unduly optimistic to count on the rate of growth that's been maintained over the past two years.

The consumer has been led to expect great changes in the marketing, packaging and distribution of specialty chemicals. And he won't be disappointed next year.

Heavy-duty dry household bleaches, made nationally familiar last year by the introduction of Beads-o-Bleach Purex should become even more familiar next year.

Heavy-duty liquid synthetics made their mark. Of the "Big Three," Colgate has not introduced its product nationally. But it has one in the laboratory, and its appearance on the market is only a matter of time.

There will be other changes, too, in the field of soaps and synthetic detergents. Specialized cold-water detergents have been catching on lately, and you can expect a number of new local companies to join the field. Also, several of the big soapers are studying the market and may bring out their own products.

More emphasis on deodorant toilet bars is a sure bet, with new bacteriostats (e.g., Monsanto's TCC) pointing the way to light-colored bars that will not discolor on exposure to light.

Containers that measure out recommended doses of material are now practical. And it could well be that the first of these will be available to the consumer in 1957.

Aerosols, too, should see some rather drastic changes. The pressure-packed products have been on a marketing boom, but many are confident that the boom is only beginning.

Cost has been a stumbling block for some applications; corrosion of the can for others. Now, development of many water-based emulsion products is far along and they should overcome the corrosion problem. (For example, aerosol window cleaners are getting a big play.)

There's greater emphasis now, too, on the development of aerosols propelled with cheap hydrocarbons (instead of the high-cost fluorocarbons presently used).

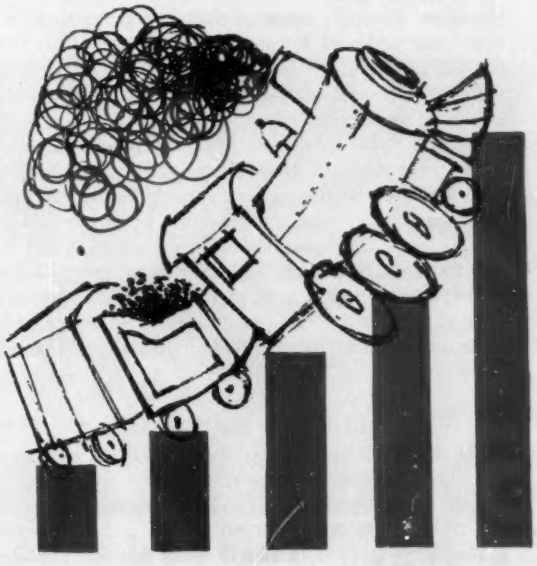
The possibilities wrought by this combination of development could be one of the most far-reaching ones in the aerosol industry: the number of low-cost household chemicals that can now be pressure-packed is virtually limitless.

## The Rising Costs of Transportation

**Railroads are asking** for two freight rates, one for 7%, the other for 15%. Both would be additional. In the past 10 years, they have not received any less than 61.5% of the four big boosts they sought ranging from 7% to 35.8%. Against that background, it is likely that rail freights will go up at least 14% next year.

This will mean that barge and truck transportation will become increasingly competitive. Take nitrogen. Diversification of production facilities has already permitted truck and barge shipments to gain a foothold. This trend could well become significant during 1957.

Steps to combat the rising freight costs will take many forms—pooled shipments, two-way hauls (to eliminate "dead heading") and bulk transportation. More products formerly shipped as solids will be transported as liquids



**Shipping** **Rail freight rates will likely go up at least 14%.**

via tank trucks. This will be in an effort to curtail handling costs, now becoming a decisive factor in transit choice.

Traffic executives will look harder at the many varieties of bulk containers that have streamed into the market in the past few years, particularly the lightweight types. But to utilize them effectively, sales departments must sell customers on obtaining the necessary bulk-handling equipment. And the rails will have to supply it—a move now under consideration.

Truckers may well ask for higher rates, of course. But it is doubtful that they will ask for a rate increase to match that of the railroads.

Chances of a price hike for steel opens the door to higher prices for drums. In paper bags, there will be a lot of emphasis on bag design. And you can count on foil-lined multiwalls hitting the market as a shelf item.

There's been considerable talk in transportation circles about the Weeks report, the two-year-old study calling for an overhaul of the nation's transportation regulations. It's not likely that the recommendations will become law intact. But there will be a strong attempt to pass some of its provisions.

Suspended rate clauses of the report could get close scrutiny by Congress, for example. And it will pay to watch changes in the Weeks report that may come about indirectly: ICC may speed up granting ex parte freight rate increases without the delays typical of the past.

## A Year for Selling

**Impact** of the increased freight rates will be felt right along the line—but particularly affected will be the sales managers. Certainly some of them are going to have to alter their attitudes toward freight charges ("we don't pay the freight").

Freight rises and other increases will mean more intensive sales promotion efforts. Look for the symposium to get a big play as a mass selling technique. Especially useful in commercial development activity, this idea was tried with outstanding success during '56. One company finds that symposiums sparked over 1,000 experimental investigations (by researchers in a variety of fields) into uses for a series of new products it is bringing along.

Product development emphasis will feel competitive pressures. There'll be a limited pruning of less profitable items and, as price competition sharpens, fewer accommodation items.

## Half-Billion for Research

**But there will be no letup** at all in the research effort. The National Science Foundation survey found that the chemical industry spent $361 million for research in 1953. The total expenditure in 1956 should amount to $480 million. And in 1957, it should come close to $504 million; by 1959, nearly $560 million.

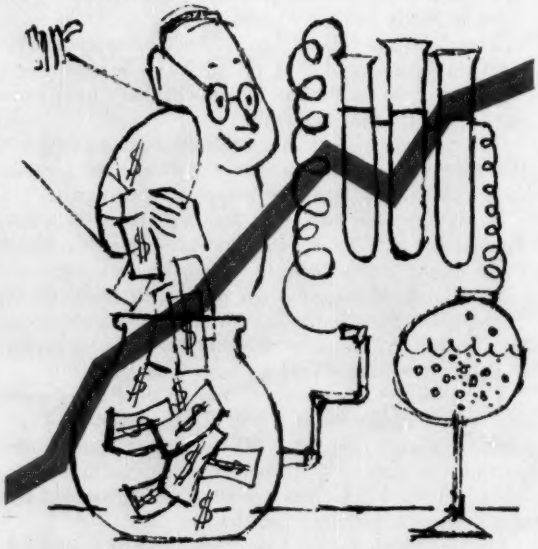
Although that may sound like a staggering sum, the wisdom of such expenditures has been driven home to the chemical industry time and again. In a McGraw-Hill economics department survey earlier this year, 61% of the chemical industry indicated that a significant portion of capital expenditures during '56 would be for new products. The same survey showed that the chemical industry expects 15% of its '59 sales to come from products that were either not produced in 1955 or were made in a form so sufficiently different that they can be considered as "new products."

But despite the emphasis chemical companies place on their own research, independent research organizations should enjoy their biggest year ever. Reason: they can often take on special projects better and cheaper than can company research organizations. And they can point to an enviable growth rate to prove it.

The government should continue to exert an important influence on the course of research next year. At present, almost one-third of all industrial research is government-supported. This contribution will get further attention in '57. Attorney General Brownell has made it plain that he feels that there may be a concentration of research in larger companies. He has called for a study to determine how this concentration affects the parent position of such firms.

Government research is going to compete, too, with private research for the scarce supply of manpower, which isn't going to be any more abundant next year.

And as research manpower gets tighter, you can look for increased agitation by professional unions seeking to recruit scientific personnel. They'll stress such things as the "compression effect" and the discrepancy between starting salaries for new researchers and salaries being paid to experienced researchers. Their arguments will be the same ones they have used before without notable success. But the likelihood of their intensifying their efforts is greater.



**RESEARCH** Spending should rise to $504 billion in 1957.

# World's Largest Acetylene Plant

## *from Natural Gas*
## (BASF Acetylene Process)

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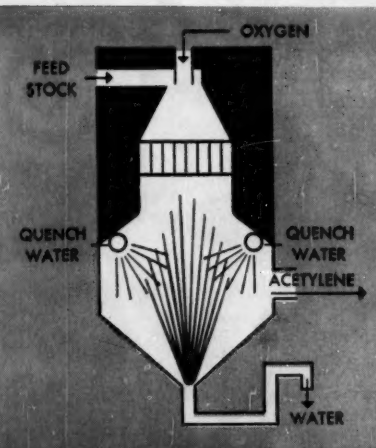
The BASF* **Acetylene Plant** of American Cyanamid Company at Avondale, Louisiana, engineered and built by CHEMICO, is now being increased in capacity, making it the WORLD'S LARGEST ACETYLENE PLANT OF ITS TYPE.

By 1957, all the plants engineered and built by CHEMICO for the production of acetylene from natural gas will have a total capacity of 150,000,000 pounds per year.

Important features of the BASF process are listed below, and reprints of article describing this process are available upon request.

* Badische Anilin & Soda Fabrik, AG, West Germany, holder of the basic acetylene process for which CHEMICO has exclusive rights in all North American Countries.




### Features of the BASF Acetylene Process

Produces commercially pure acetylene, meeting specifications for the manufacture of acetylene derivative products such as Acrylonitrile, Vinyl Chloride, Methylstyrene, etc.

Permits the use of a variety of feed stocks such as Methane, Ethane, Propane and other petroleum gases.

Produces off-gas suitable for Ammonia and Methanol synthesis.

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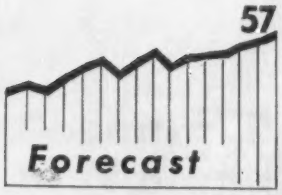
460 Mission Street, San Francisco 5, Calif. Mercantile Securities Building, Dallas 1, Texas
30 Rockefeller Plaza, New York 20, N. Y. Carew Tower, Cincinnati 2, Ohio
20 North Wacker Drive, Chicago 6, Illinois 714 West Olympic Blvd., Los Angeles 15, Calif.

EUROPEAN OFFICE

[illegible] Avenue William Favre, Geneva, Switzerland




## More Expensive Help

**Not only is manpower** going to be harder to get next year; it's going to cost more, too. With the continuing competition for high-caliber executive, sales, engineering and scientific personnel, it's a good bet that total salary payments will advance another 6% or more in 1957. The new round of wage boosts started by the steelworkers and mine workers in the past few months will spur similar rises for most hourly paid employees.

Over-all, total payroll costs for makers of chemicals and allied products are likely to climb about $170 million from this year's approximately $2.5-billion aggregate.

Moving under the same competitive pressures, fringe benefits can be counted on to continue their steady post-war incline to an industry-wide average of more than $1,000/year/employee.

## Challenge of Technology

**Some of the biggest** developments in the chemical industry during 1956 unquestionably were in the field of olefin polymerization. Interest in that field should continue, even heighten during 1957.

Germany's Karl Ziegler, Italy's Giulio Natta and workers of U.S. process companies (Phillips, Standard of Indiana) made important contributions in directing the path of olefin polymerizations. That, in turn, has opened the door to the production of "synthetic natural rubber" (Goodyear, Goodrich, Firestone, Phillips). Next year should see significant advances in that field. (Another thing to watch in synthetic rubber is the renewed interest in butyl rubber.)

Some of the research into polymerization of propylene and larger olefin molecules should start to bear fruit during '57, as should the work on copolymerization of such materials as ethylene and propylene.

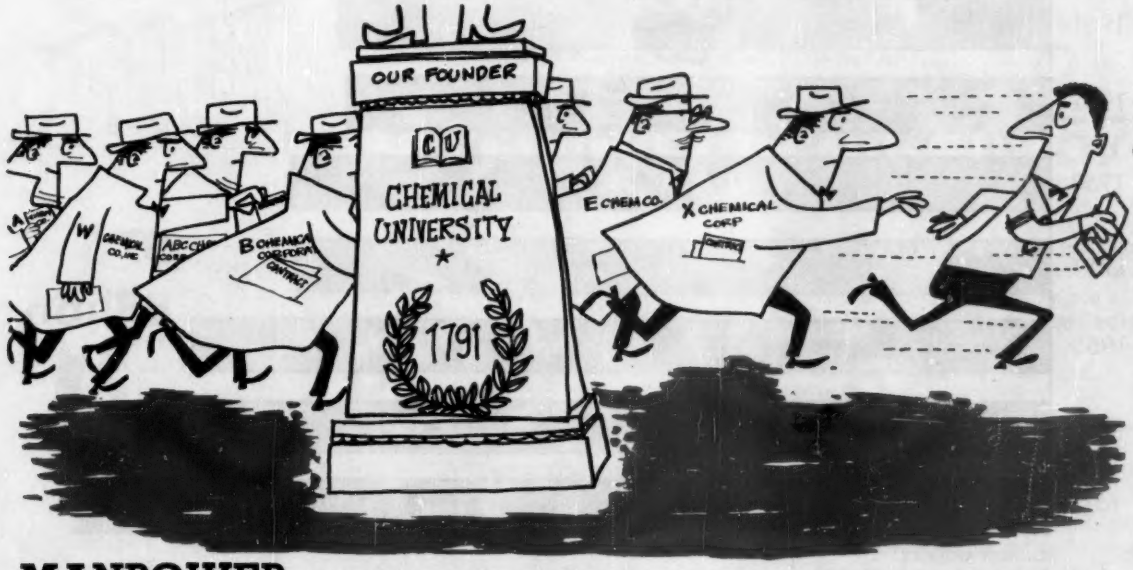
Coal, as a direct source of chemicals, received setbacks during '56 when Carbide decided to send its hydrogenation process back to a smaller pilot plant and when Du Pont decided to switch its synthesis gas production (at Belle, W. Va.) from coal, as a starting material, to natural gas.

But other developments helped make up for any loss that coal might have suffered. Particularly notable: Pittsburgh Consolidation Coal's decision to commercialize its low-temperature carbonization process in conjunction with power plants for aluminum production in Cresap, W. Va. This plant will not be placed in operation next year. But when going full blast, it will turn out 50-60 million gal./year of refined liquids. This will have a tremendous impact on chemical production.

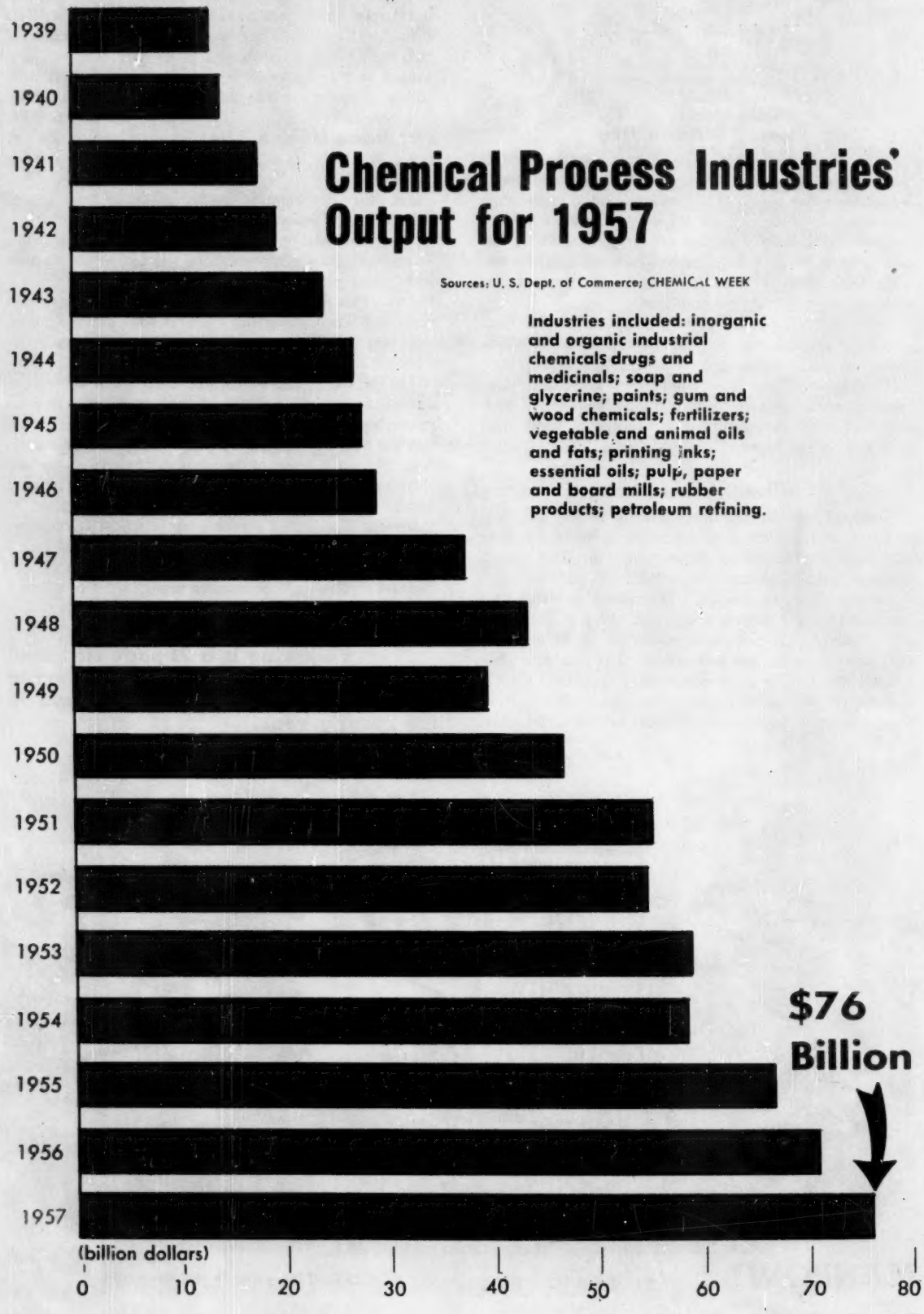
The mental drugs, which won such quick acceptance during '56, should continue to corner a great deal of research interest in '57. Tests to determine precisely how effective they are in mental therapy will gain momentum. And research to pinpoint the relationships between certain chemical groupings and emotional or mental upsets should continue.

In general, 1957 will be a year in which technology, cost-consciousness and sales efforts will be relied on to counteract the economic pressures holding down profits. The net result should be another year of solid prosperity.

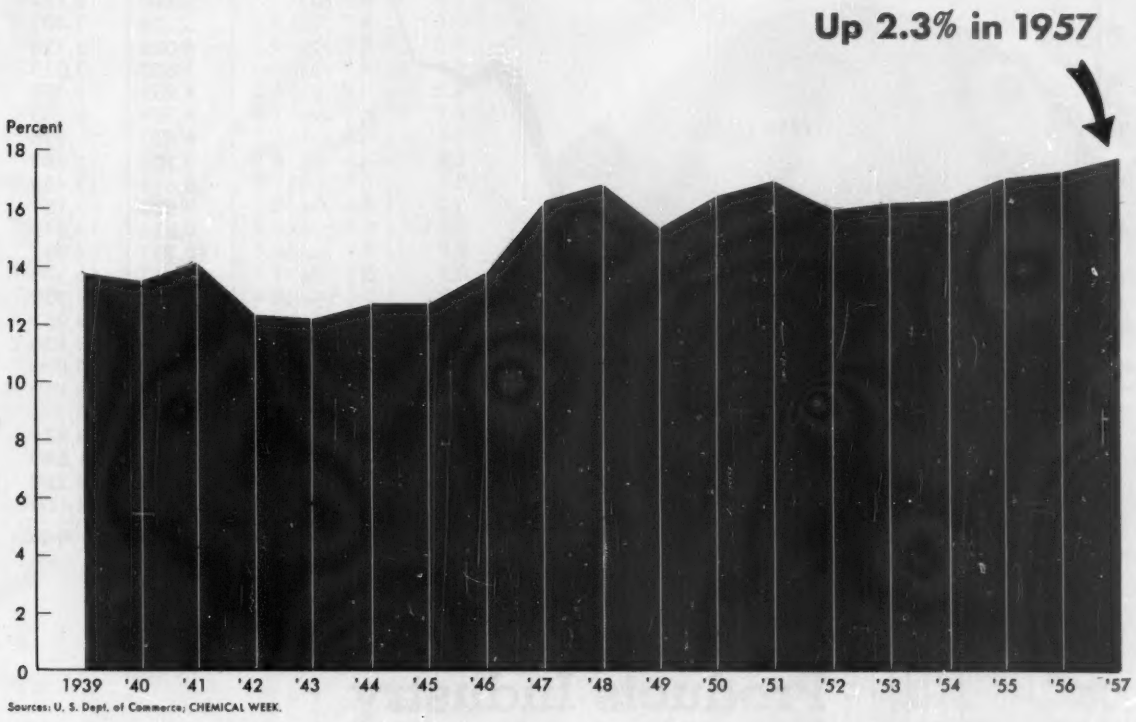
**Following is a 21-page statistical report—facts, figures and forecasts to aid management in planning for growth in the coming year.**



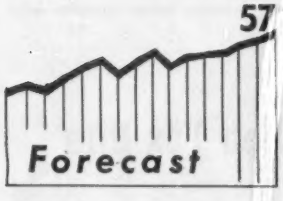

**MANPOWER** **Not only is manpower going to be harder to find; it's going to cost more, too.**


Chemical Process Industries' Output for 1957
Sources: U. S. Dept. of Commerce; CHEMICAL WEEK
Industries included: inorganic and organic industrial chemicals drugs and medicinals; soap and glycerine; paints; gum and wood chemicals; fertilizers; vegetable and animal oils and fats; printing inks; essential oils; pulp, paper and board mills; rubber products; petroleum refining.
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
$76 Billion
(billion dollars)
0
10
20
30
40
50
60
70
80

## Chemical Process Industries' Contribution to National Output of All Goods and Services




Sources: U. S. Dept. of Commerce; CHEMICAL WEEK.




# Benchmarks for Decision-Making in '57

**Decision-making** in the chemical process industries calls for facts —and figures. To round out Forecast '57 (*see p. 40 for beginning*), CHEMICAL WEEK here presents 21 pages of key statistics for management men.

This selective report presents those important statistics available to industry from various government agencies, as well as those from private business sources. In addition, many usually unavailable figures were independently derived.

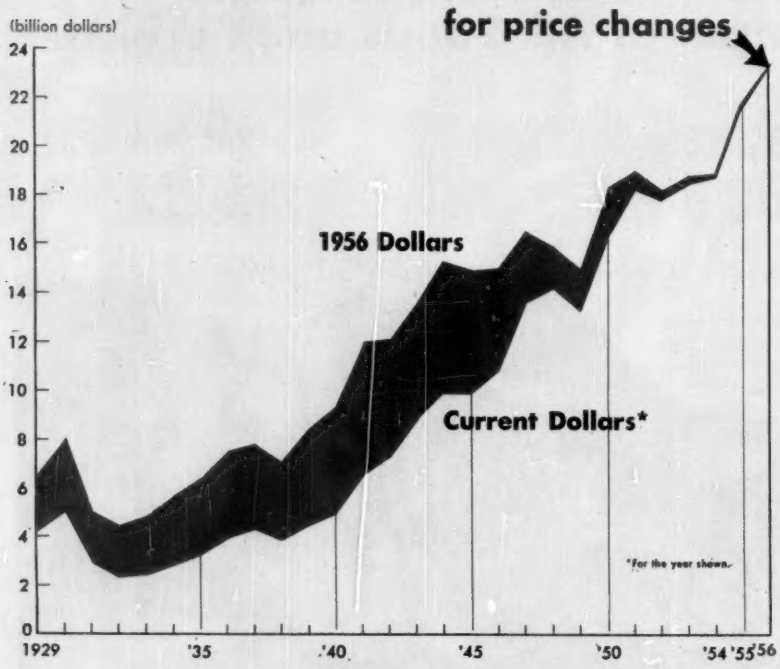
Because different branches of the chemical process industries undoubtedly will want to apply these statistics in diverse ways, no attempt has been made in this portion of *CW*'s Forecast Report to analyze data. Figures for 1956 are based on preliminary returns ("p" in the tables) or estimated in those series where data was not yet available. Wherever a relatively high degree of forecast accuracy was possible, estimates for 1957, '58 and '59 were made.

Statistics cover the following industries: chemical and allied products, petroleum and coal products, soap and detergents, rubber and rubber products, vegetable and animal oils and fats, fertilizer, pulp, paper and board mills, paint, drugs and medicinals, plastics and synthetic fibers.

Pertinent data for these industries include: corporate sales, profits, taxes, capital expenditures, capital investment per worker, capacity, prices, stock prices, dividends, production, employment, hourly earnings and hours worked, weekly pay, exports and imports.

## CORPORATE SALES

### Up 7.6% in 1956 after adjusting for price changes




| | Corporate Sales (million $) | Adjusted for Price Changes (million 1956 $) |
|---|---|---|
| 1932 | $ 2,170 | $ 4,314 |
| 1933 | 2,251 | 4,709 |
| 1934 | 2,726 | 5,529 |
| 1935 | 3,119 | 6,164 |
| 1936 | 3,783 | 7,403 |
| 1937 | 4,088 | 7,728 |
| 1938 | 3,657 | 7,033 |
| 1939 | 4,251 | 8,303 |
| 1940 | 4,764 | 9,233 |
| 1941 | 6,437 | 11,876 |
| 1942 | 7,205 | 11,988 |
| 1943 | 8,612 | 13,498 |
| 1944 | 9,822 | 15,157 |
| 1945 | 9,834 | 14,833 |
| 1946 | 10,737 | 14,933 |
| 1947 | 13,487 | 16,388 |
| 1948 | 13,972 | 15,770 |
| 1949 | 13,050 | 14,863 |
| 1950 | 16,104 | 18,176 |
| 1951 | 18,055 | 18,866 |
| 1952 | 17,724 | 18,122 |
| 1953 | 18,440 | 18,702 |
| 1954 | 18,643 | 18,831 |
| 1955 | 21,365 | 21,646 |
| 1956 p. | 23,288 | 23,288 |
| 1957 (est.) | 25,500 | 24,100 |

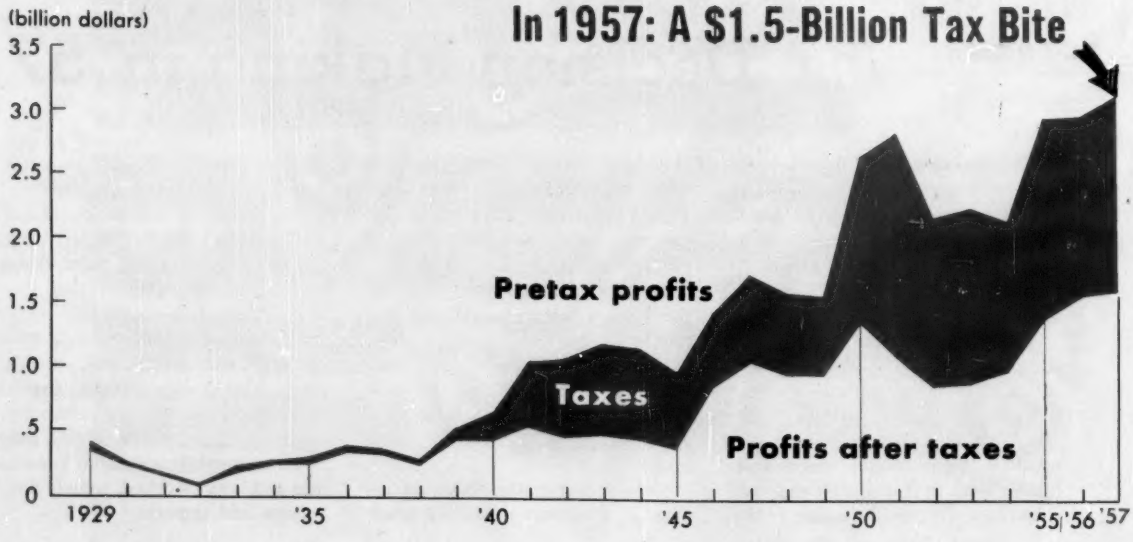
Source: U.S. Dept. of Commerce; CHEMICAL WEEK

# Chemical and Allied Products Industry

(Includes industrial chemicals; drugs and medicinals; soap and glycerine; paints; gum and wood chemicals; fertilizers; vegetable and animal oils and fats; printing inks; essential oils)

## PROFITS BEFORE AND AFTER TAXES

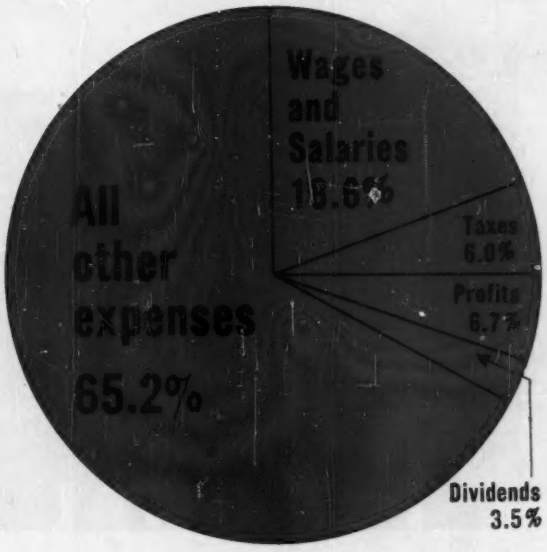
### In 1957: A $1.5-Billion Tax Bite



# How Chemical and Allied Products Industry Spent Its 1956 Sales Dollar

| | Wages and Salaries as a Percent of Sales | Taxes as a Percent of Sales | Profits After Taxes as a Percent of Sales | Dividends as a Percent of Sales |
|---|---|---|---|---|
| 1932 | 19.0% | 1.1% | 3.5% | 7.8% |
| 1933 | 18.7 | 1.7 | 8.2 | 7.7 |
| 1934 | 18.2 | 1.7 | 8.4 | 5.7 |
| 1935 | 16.8 | 1.7 | 7.9 | 8.5 |
| 1936 | 15.1 | 2.0 | 8.4 | 6.6 |
| 1937 | 16.4 | 1.9 | 7.7 | 6.3 |
| 1938 | 17.0 | 1.7 | 6.4 | 4.7 |
| 1939 | 15.7 | 2.4 | 9.7 | 5.9 |
| 1940 | 17.0 | 4.3 | 9.2 | 5.3 |
| 1941 | 17.1 | 7.7 | 8.0 | 4.0 |
| 1942 | 23.1 | 8.4 | 6.4 | 3.3 |
| 1943 | 23.5 | 8.2 | 5.7 | 3.0 |
| 1944 | 21.0 | 7.0 | 4.6 | 2.8 |
| 1945 | 21.1 | 5.9 | 4.0 | 3.0 |
| 1946 | 18.2 | 5.3 | 7.9 | 3.4 |
| 1947 | 16.7 | 5.1 | 7.6 | 3.0 |
| 1948 | 16.8 | 4.6 | 6.7 | 2.8 |
| 1949 | 17.9 | 4.9 | 7.0 | 3.4 |
| 1950 | 15.8 | 8.1 | 8.2 | 3.6 |
| 1951 | 16.9 | 9.7 | 6.0 | 3.0 |
| 1952 | 18.6 | 7.5 | 4.7 | 3.2 |
| 1953 | 19.9 | 7.4 | 4.7 | 3.0 |
| 1954 | 20.2 | 6.1 | 5.3 | 3.5 |
| 1955 | 18.8 | 7.3 | 5.9 | 3.7 |
| 1956 p. | 18.6 | 6.0 | 6.7 | 3.5 |
| 1957 (est.) | 18.8 | 6.0 | 6.2 | 3.3 |

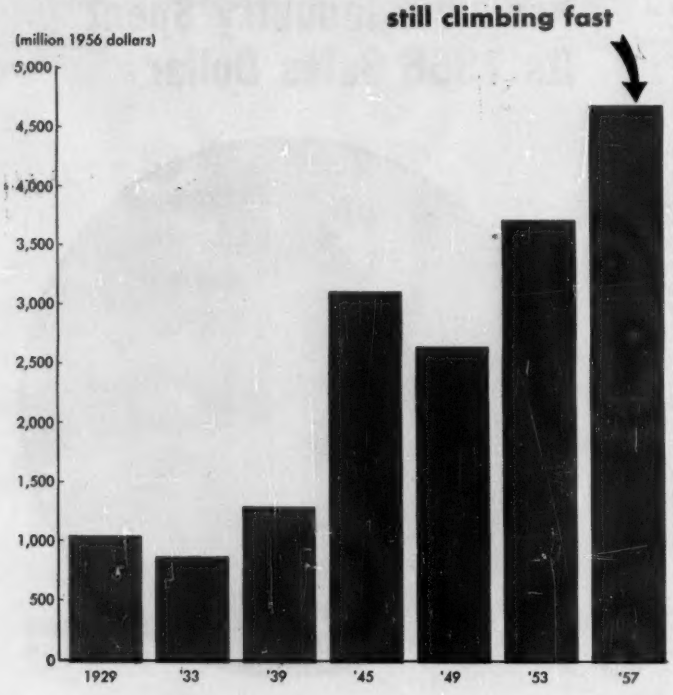
Source: U. S. Dept. of Commerce; CHEMICAL WEEK.




| | Pretax Profits (million $) | Pretax Profits Adjusted for Price Changes (million 1956 $) | Taxes (million $) | Taxes as a Percent of Pretax Profits | Profits After Taxes (million $) | Profits After Taxes Adjusted for Price Changes (million 1956 $) | Profits After Taxes as a Percent of Pretax Profits |
|---|---|---|---|---|---|---|---|
| 1932 | $ 99 | $ 197 | $ 24 | 24.2% | $ 75 | $ 149 | 75.8% |
| 1933 | 222 | 464 | 38 | 17.1 | 184 | 385 | 82.9 |
| 1934 | 278 | 564 | 48 | 17.3 | 230 | 467 | 82.7 |
| 1935 | 298 | 589 | 53 | 17.8 | 245 | 484 | 82.2 |
| 1936 | 396 | 775 | 77 | 19.4 | 319 | 624 | 80.6 |
| 1937 | 389 | 735 | 76 | 19.5 | 313 | 592 | 80.5 |
| 1938 | 298 | 573 | 63 | 21.1 | 235 | 452 | 78.9 |
| 1939 | 513 | 1,012 | 102 | 19.9 | 411 | 803 | 80.1 |
| 1940 | 643 | 1,246 | 204 | 31.7 | 439 | 851 | 68.3 |
| 1941 | 1,015 | 1,873 | 498 | 49.1 | 517 | 954 | 50.9 |
| 1942 | 1,067 | 1,775 | 603 | 56.5 | 464 | 772 | 43.5 |
| 1943 | 1,194 | 1,871 | 702 | 58.8 | 492 | 771 | 41.2 |
| 1944 | 1,139 | 1,758 | 683 | 60.0 | 456 | 704 | 40.0 |
| 1945 | 980 | 1,478 | 584 | 59.6 | 396 | 597 | 40.4 |
| 1946 | 1,416 | 1,969 | 571 | 40.3 | 845 | 1,175 | 59.7 |
| 1947 | 1,708 | 2,075 | 684 | 40.0 | 1,024 | 1,244 | 60.0 |
| 1948 | 1,575 | 1,775 | 637 | 40.4 | 938 | 1,059 | 59.6 |
| 1949 | 1,549 | 1,764 | 637 | 41.1 | 912 | 1,039 | 58.9 |
| 1950 | 2,625 | 2,963 | 1,302 | 49.6 | 1,323 | 1,493 | 50.4 |
| 1951 | 2,823 | 2,950 | 1,746 | 61.8 | 1,077 | 1,125 | 38.2 |
| 1952 | 2,156 | 2,204 | 1,324 | 61.4 | 832 | 851 | 38.6 |
| 1953 | 2,223 | 2,255 | 1,359 | 61.1 | 864 | 876 | 38.9 |
| 1954 | 2,116 | 2,137 | 1,132 | 53.5 | 984 | 994 | 46.5 |
| 1955 | 2,929 | 2,968 | 1,562 | 53.3 | 1,367 | 1,385 | 46.7 |
| 1956 p. | 2,950 | 2,950 | 1,392 | 47.2 | 1,558 | 1,558 | 52.8 |
| 1957 (est.) | 3,100 | 3,038 | 1,519 | 49.0 | 1,581 | 1,549 | 51.0 |

Source: U. S. Dept. of Commerce; CHEMICAL WEEK.

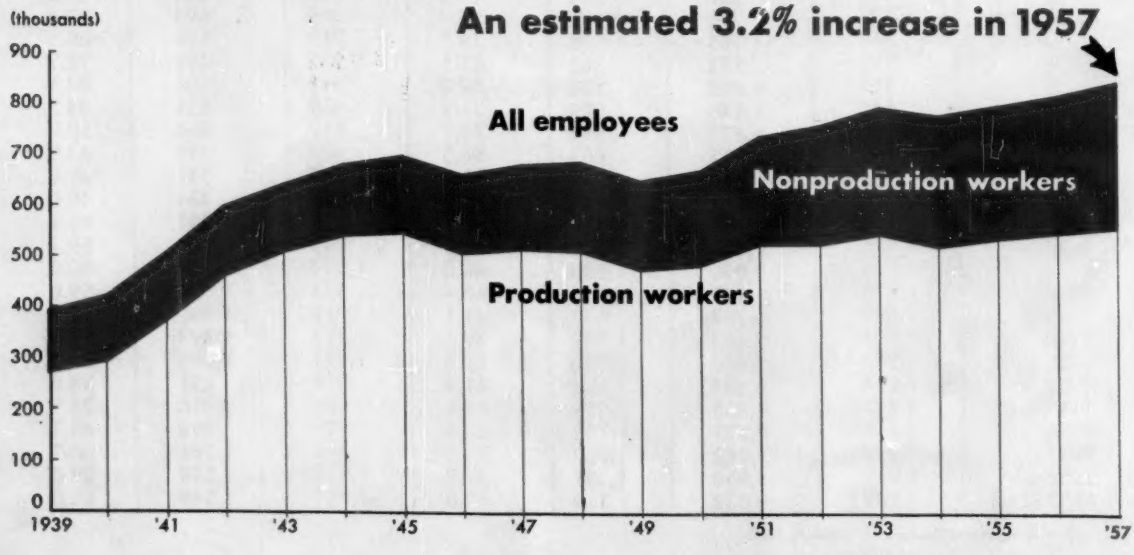
## WAGES AND SALARIES...




| | Wages and Salaries (million $) | Wages and Salaries Adjusted for Price Changes (million 1956 $) |
|---|---|---|
| 1930 | $ 621 | $ 1,008 |
| 1931 | 529 | 945 |
| 1932 | 413 | 821 |
| 1933 | 421 | 881 |
| 1934 | 495 | 1,004 |
| 1935 | 525 | 1,038 |
| 1936 | 572 | 1,119 |
| 1937 | 672 | 1,270 |
| 1938 | 621 | 1,194 |
| 1939 | 667 | 1,303 |
| 1940 | 808 | 1,566 |
| 1941 | 1,098 | 2,026 |
| 1942 | 1,662 | 2,765 |
| 1943 | 2,026 | 3,176 |
| 1944 | 2,060 | 3,179 |
| 1945 | 2,072 | 3,125 |
| 1946 | 1,949 | 2,711 |
| 1947 | 2,255 | 2,740 |
| 1948 | 2,352 | 2,655 |
| 1949 | 2,332 | 2,656 |
| 1950 | 2,551 | 2,879 |
| 1951 | 3,048 | 3,185 |
| 1952 | 3,300 | 3,374 |
| 1953 | 3,677 | 3,729 |
| 1954 | 3,758 | 3,796 |
| 1955 | 4,020 | 4,073 |
| 1956 p. | 4,342 | 4,342 |
| 1957 (est.) | 4,800 | 4,704 |

# Chemical and Allied Products (cont.)

## PRODUCTION AND NONPRODUCTION WORKERS

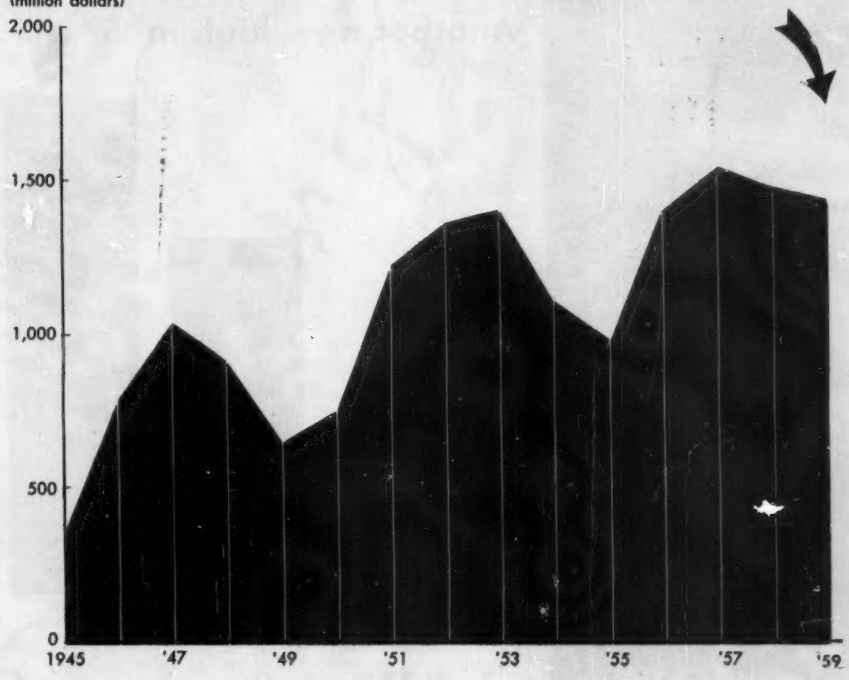


## CAPITAL EXPENDITURES—FORECAST FOR '59

| | Capital Expenditures* (million $) |
|---|---|
| 1945 | $ 376 |
| 1946 | 800 |
| 1947 | 1,060 |
| 1948 | 941 |
| 1949 | 670 |
| 1950 | 771 |
| 1951 | 1,247 |
| 1952 | 1,386 |
| 1953 | 1,428 |
| 1954 | 1,130 |
| 1955 | 1,016 |
| 1956 p. | 1,433 |
| 1957 (est.) | 1,576 |
| 1958 (est.) | 1,513 |
| 1959 (est.) | 1,468 |

Source: U. S. Dept. of Commerce; McGraw-Hill Dept. of Economics; Federal Reserve Board; CHEMICAL ENGINEERING; U. S. Bureau of Labor Statistics; Standard & Poor's; National Industrial Conference Board; CHEMICAL WEEK.

*See CW, Dec. 15, '56



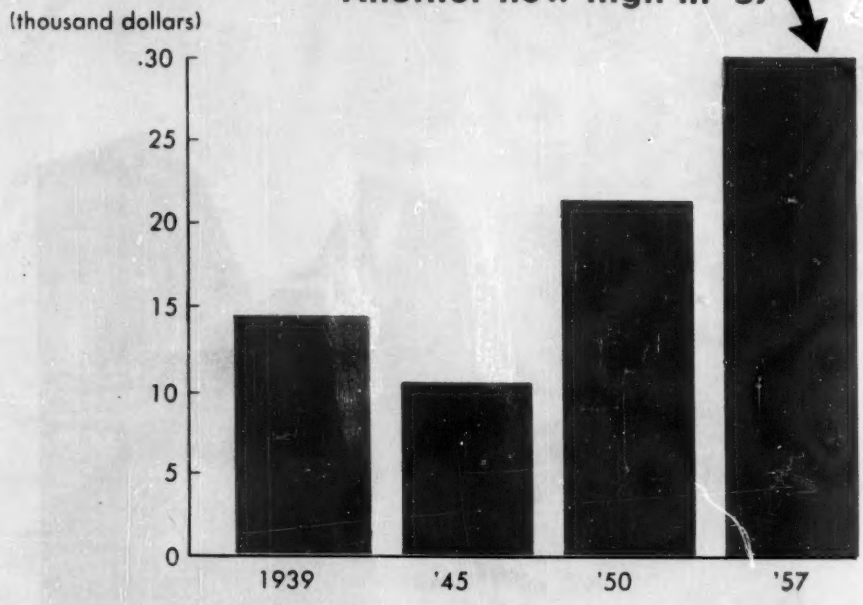

Source: U.S. Dept. of Commerce CHEMICAL WEEK.

| | All Employees (thousands) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Gross Pay | Weekly Gross Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|
| 1939 | 406 | 277 | 39.5 | $ .649 | $25.59 | $49.98 |
| 1940 | 437 | 302 | 39.7 | .676 | 26.80 | 51.94 |
| 1941 | 524 | 381 | 40.8 | .739 | 30.15 | 55.63 |
| 1942 | 615 | 471 | 42.8 | .848 | 36.36 | 60.50 |
| 1943 | 655 | 520 | 45.3 | .916 | 41.53 | 65.09 |
| 1944 | 695 | 551 | 45.7 | .953 | 43.58 | 67.25 |
| 1945 | 711 | 555 | 44.5 | .989 | 43.99 | 66.35 |
| 1946 | 675 | 517 | 41.2 | 1.077 | 44.34 | 61.67 |
| 1947 | 694 | 525 | 41.5 | 1.232 | 51.13 | 62.13 |
| 1948 | 700 | 522 | 41.5 | 1.355 | 56.23 | 63.47 |
| 1949 | 663 | 484 | 41.0 | 1.430 | 58.63 | 66.78 |
| 1950 | 682 | 494 | 41.5 | 1.510 | 62.67 | 70.73 |
| 1951 | 749 | 536 | 41.6 | 1.630 | 67.81 | 70.86 |
| 1952 | 770 | 537 | 41.2 | 1.710 | 70.45 | 72.03 |
| 1953 | 807 | 553 | 41.3 | 1.830 | 75.58 | 76.65 |
| 1954 | 791 | 532 | 41.1 | 1.910 | 78.50 | 79.29 |
| 1955 | 811 | 546 | 41.4 | 1.990 | 82.39 | 83.48 |
| 1956 p. | 832 | 555 | 41.3 | 2.110 | 87.00 | 87.00 |
| 1957 (est.) | 855 | 567 | 41.3 | 2.210 | 91.27 | 89.44 |

Source: U.S. Bureau of Labor Statistics; U.S. Dept. of Commerce; CHEMICAL WEEK.

## CAPITAL INVESTMENT PER PRODUCTION WORKER

Another new high in '57



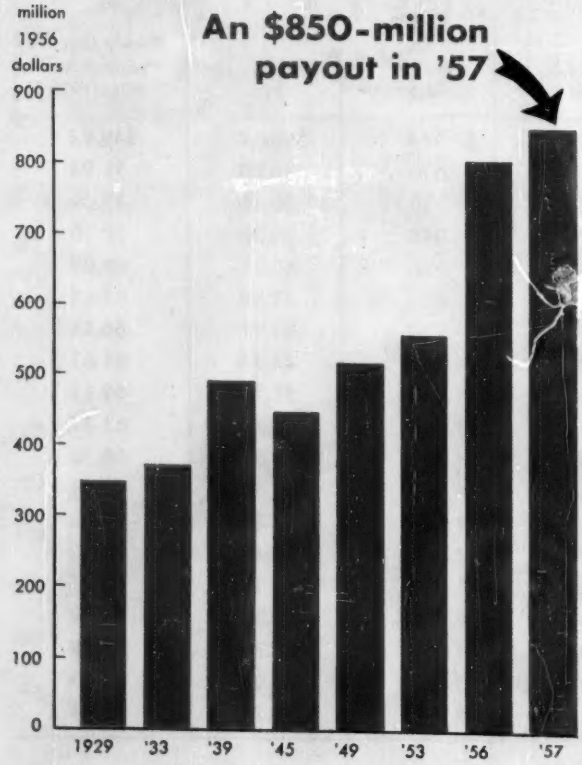

| | Capital Investment Per Worker |
|---|---|
| 1939 | $14,336 |
| 1940 | 14,272 |
| 1941 | 12,953 |
| 1942 | 11,240 |
| 1943 | 11,156 |
| 1944 | 10,385 |
| 1945 | 10,209 |
| 1946 | 13,240 |
| 1947 | 15,862 |
| 1948 | 16,852 |
| 1949 | 19,237 |
| 1950 | 21,368 |
| 1951 | 22,891 |
| 1952 | 23,901 |
| 1953 | 25,776 |
| 1954 | 25,607 |
| 1955 | 28,065 |
| 1956 | 29,000 |
| 1957 (est.) | 30,000 |

Source: U. S. Dept. of Commerce, McGraw-Hill Dept. of Economics, Federal Reserve Boards, CHEMICAL ENGINEERING, U. S. Bureau of Labor Statistics, Standard and Poor's, National Industrial Conference Board, CHEMICAL WEEK.

# Chemical and Allied Products (cont.)

## DIVIDENDS

An $850-million payout in '57




| | Dividends Paid Out (million$) | Dividends as a Percent of Profits After Taxes | Dividends Adjusted for Price Changes (million 1956 $) |
|---|---|---|---|
| 1929 | $217 | 59.5% | $343 |
| 1930 | 269 | 113.0 | 437 |
| 1931 | 196 | 124.8 | 350 |
| 1932 | 169 | 225.3 | 336 |
| 1933 | 174 | 94.6 | 364 |
| 1934 | 156 | 67.8 | 316 |
| 1935 | 264 | 107.8 | 522 |
| 1936 | 249 | 78.1 | 487 |
| 1937 | 257 | 82.1 | 486 |
| 1938 | 172 | 73.2 | 331 |
| 1939 | 251 | 61.1 | 490 |
| 1940 | 254 | 57.9 | 492 |
| 1941 | 260 | 50.3 | 480 |
| 1942 | 237 | 51.1 | 394 |
| 1943 | 262 | 53.3 | 411 |
| 1944 | 271 | 59.4 | 418 |
| 1945 | 298 | 75.3 | 449 |
| 1946 | 360 | 42.6 | 501 |
| 1947 | 401 | 39.2 | 487 |
| 1948 | 398 | 42.4 | 449 |
| 1949 | 450 | 49.3 | 513 |
| 1950 | 576 | 43.5 | 650 |
| 1951 | 539 | 50.0 | 563 |
| 1952 | 567 | 68.1 | 580 |
| 1953 | 548 | 63.4 | 556 |
| 1954 | 648 | 65.9 | 655 |
| 1955 | 788 | 57.6 | 798 |
| 1956 p. | 804 | 51.6 | 804 |
| 1957 (est.) | 850 | 53.8 | 833 |

Source: U. S. Dept. of Commerce, CHEMICAL WEEK.

Designing?

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Dependable Name in Chemicals for 59 Years

# *Victor chemicals solve design problems in many*

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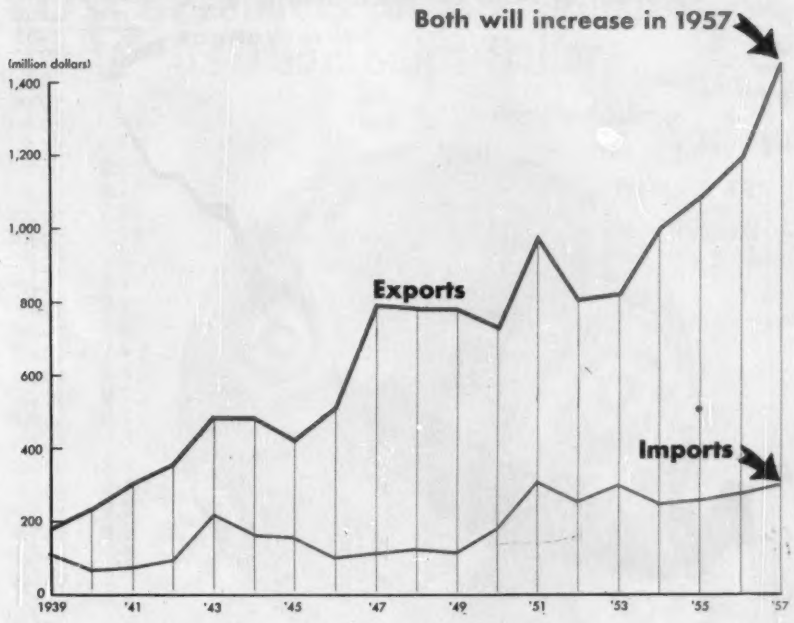
*Dependable Name in Chemicals for 59 Years*

## IMPORTS AND EXPORTS

| | Exports (million $) | Imports (million $) |
|---|---|---|
| 1939 | $162.8 | $79.5 |
| 1940 | 221.9 | 58.2 |
| 1941 | 291.8 | 60.7 |
| 1942 | 347.7 | 88.4 |
| 1943 | 474.3 | 203.5 |
| 1944 | 472.4 | 156.5 |
| 1945 | 414.3 | 144.2 |
| 1946 | 500.1 | 99.6 |
| 1947 | 782.9 | 105.2 |
| 1948 | 779.8 | 111.4 |
| 1949 | 773.7 | 106.8 |
| 1950 | 725.1 | 170.3 |
| 1951 | 977.1 | 300.4 |
| 1952 | 801.7 | 244.4 |
| 1953 | 819.0 | 293.0 |
| 1954 | 1,003.8 | 249.3 |
| 1955 | 1,089.4 | 254.9 |
| 1956 p. | 1,250.0 | 275.0 |
| 1957 (est.) | 1,450.0 | 300.0 |

Source: U. S. Bureau of Labor Statistics; U. S. Dept. of Commerce; CHEMICAL WEEK.




# Chemical and Allied Products (cont.)

*Coming: Hikes in production, consumption, prices.*

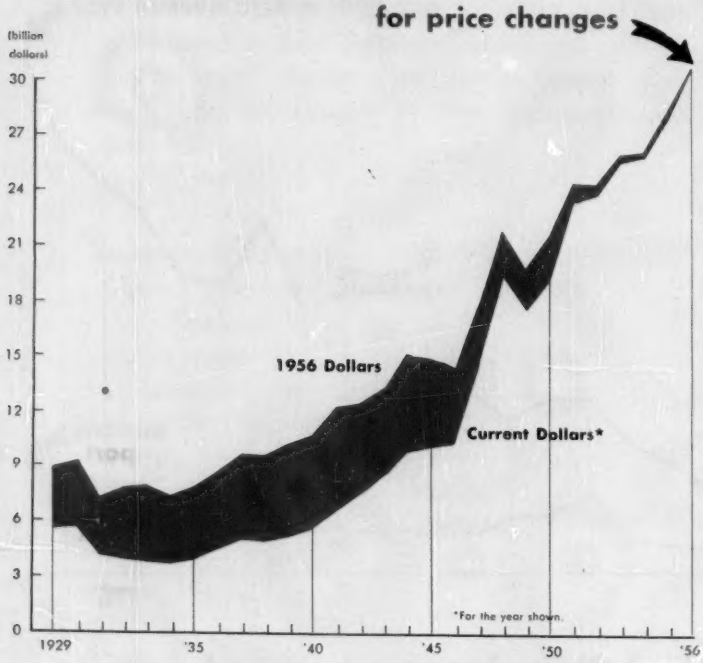
| | Index of Capacity 1950=100 | Index of Production 1947-49=100 | Index of Consumption 1935=100 | Wholesale Price Index 1947-49=100 |
|---|---|---|---|---|
| 1939 | 34 | N. A. | 124.15 | N. A. |
| 1945 | N. A. | N. A. | 187.10 | N. A. |
| 1946 | 59 | N. A. | 201.44 | N. A. |
| 1947 | N. A. | 97 | 221.88 | 101.4 |
| 1948 | 85 | 103 | 230.06 | 103.8 |
| 1949 | 90 | 101 | 215.90 | 94.8 |
| 1950 | 100 | 121 | 251.75 | 96.3 |
| 1951 | 110 | 136 | 266.82 | 110.0 |
| 1952 | 122 | 137 | 261.66 | 104.5 |
| 1953 | 134 | 147 | 274.47 | 105.7 |
| 1954 | 142 | 148 | 266.46 | 107.0 |
| 1955 | 152 | 167 | 298.57 | 106.6 |
| 1956 | 166 | 178 | 315.00 | 107.1 |
| 1957 | N. A. | 190 | 425.00 | 108.0 |
| 1958 | N. A. | N. A. | N. A. | N. A. |
| 1959 | 214 | N. A. | N. A. | N. A. |

| | Manufacturers' Sales - Monthly Average (million $) | Manufacturers' Inventories as of Dec. 31 (million $) | Ratio of Inventories to Sales | Stock Price Index 1935-39=100 |
|---|---|---|---|---|
| 1941 | 545 | 1,231 | 2.26 | 102.2 |
| 1942 | 606 | 1,269 | 2.09 | 87.4 |
| 1943 | 734 | 1,390 | 1.89 | 105.9 |
| 1944 | 838 | 1,397 | 1.67 | 105.9 |
| 1945 | 844 | 1,415 | 1.68 | 121.0 |
| 1946 | 915 | 1,826 | 2.00 | 140.9 |
| 1947 | 1,141 | 2,209 | 1.94 | 134.0 |
| 1948 | 1,197 | 2,263 | 1.89 | 132.6 |
| 1949 | 1,110 | 2,072 | 1.87 | 136.9 |
| 1950 | 1,369 | 2,474 | 1.81 | 179.4 |
| 1951 | 1,535 | 3,039 | 1.98 | 230.5 |
| 1952 | 1,508 | 3,004 | 1.99 | 235.1 |
| 1953 | 1,609 | 3,070 | 1.91 | 246.6 |
| 1954 | 1,630 | 3,082 | 1.89 | 303.9 |
| 1955 | 1,919 | 3,280 | 1.71 | 427.3 |
| 1956 (est.) | 2,042 | 3,700 | 1.81 | 474.5 |

Source: U.S. Dept. of Commerce; McGraw-Hill Dept. of Economics; Federal Reserve Board; CHEMICAL ENGINEERING; U.S. Bureau of Labor Statistics; Standard & Poor's; National Industrial Conference Board; CHEMICAL WEEK.

## CORPORATE SALES

**Up 8.6% in 1956 after adjusting for price changes**



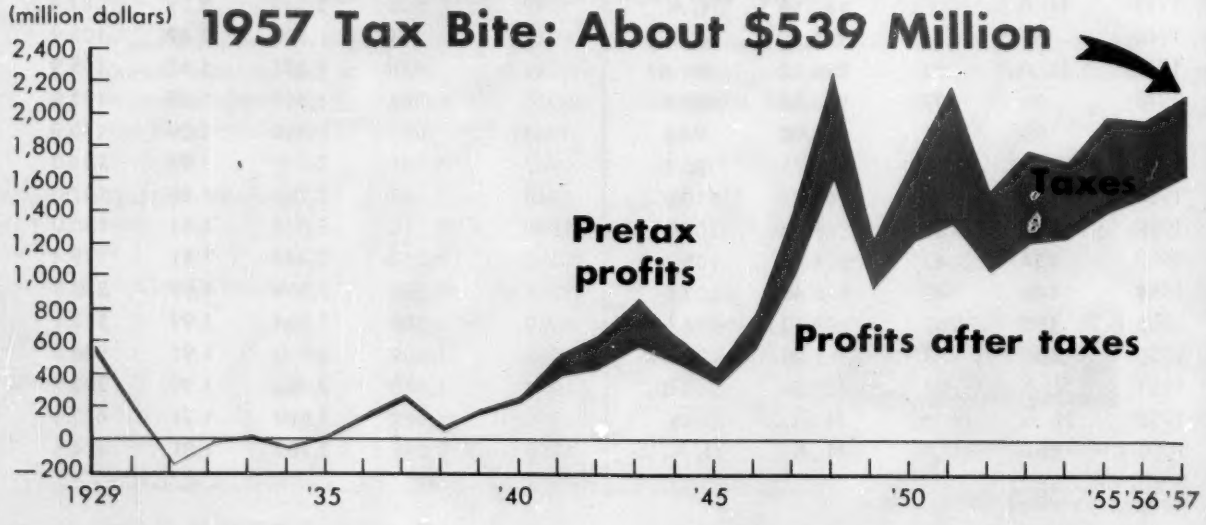

| | Corporate Sales (million $) | Corporate Sales Adjusted for Price Changes (million 1956 $) |
|---|---|---|
| 1931 | $4,131 | $7,377 |
| 1932 | 3,951 | 7,855 |
| 1933 | 3,794 | 7,937 |
| 1934 | 3,620 | 7,343 |
| 1935 | 3,952 | 7,810 |
| 1936 | 4,419 | 8,648 |
| 1937 | 5,086 | 9,614 |
| 1938 | 4,956 | 9,531 |
| 1939 | 5,254 | 10,262 |
| 1940 | 5,523 | 10,703 |
| 1941 | 6,659 | 12,286 |
| 1942 | 7,478 | 12,443 |
| 1943 | 8,500 | 13,323 |
| 1944 | 9,853 | 15,205 |
| 1945 | 10,007 | 15,093 |
| 1946 | 10,374 | 14,428 |
| 1947 | 14,792 | 17,973 |
| 1948 | 19,411 | 21,908 |
| 1949 | 17,560 | 20,000 |
| 1950 | 19,281 | 21,761 |
| 1951 | 23,481 | 24,536 |
| 1952 | 23,903 | 24,440 |
| 1953 | 25,650 | 26,014 |
| 1954 | 25,907 | 26,169 |
| 1955 | 28,083 | 28,452 |
| 1956 p. | 30,890 | 30,890 |
| 1957 (est.) | 33,980 | 33,300 |

Source: U. S. Dept. of Commerce; CHEMICAL WEEK.

# Petroleum and Coal Products Industry

## PROFITS BEFORE AND AFTER TAXES

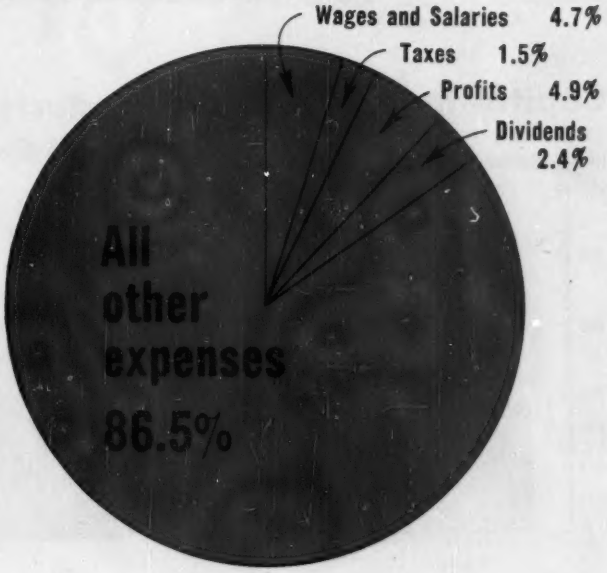
**1957 Tax Bite: About $539 Million**



# How Petroleum and Coal Products Industry Spent Its 1956 Sales Dollar

| | Wages and Salaries as a Percent of Sales | Taxes as a Percent of Sales | Profits After Taxes as a Percent of Sales | Dividends as a Percent of Sales |
|---|---|---|---|---|
| 1932 | 4.0% | 0.1% | — | 2.8% |
| 1933 | 3.9 | 0.2 | 0.2% | 3.1 |
| 1934 | 4.8 | 0.1 | — | 0.2 |
| 1935 | 4.9 | 0.2 | 0.4 | 1.0 |
| 1936 | 4.6 | 0.5 | 3.2 | 4.3 |
| 1937 | 4.8 | 0.7 | 4.8 | 2.9 |
| 1938 | 4.9 | 0.3 | 1.2 | 1.4 |
| 1939 | 4.8 | 0.4 | 3.2 | 1.5 |
| 1940 | 5.3 | 0.9 | 3.4 | 1.5 |
| 1941 | 5.3 | 2.1 | 5.8 | 1.6 |
| 1942 | 5.9 | 2.9 | 5.7 | 3.3 |
| 1943 | 6.1 | 3.4 | 6.8 | 2.8 |
| 1944 | 6.1 | 1.3 | 4.8 | 2.8 |
| 1945 | 6.4 | 0.9 | 3.5 | 2.5 |
| 1946 | 6.7 | 2.0 | 4.0 | 2.8 |
| 1947 | 5.6 | 2.6 | 7.1 | 2.5 |
| 1948 | 5.1 | 3.2 | 8.4 | 2.1 |
| 1949 | 5.6 | 1.7 | 5.3 | 3.0 |
| 1950 | 5.3 | 2.7 | 6.3 | 2.5 |
| 1951 | 4.9 | 3.6 | 5.7 | 2.4 |
| 1952 | 5.2 | 2.1 | 4.3 | 2.3 |
| 1953 | 5.1 | 2.2 | 4.7 | 2.6 |
| 1954 | 5.1 | 1.8 | 4.8 | 2.7 |
| 1955 | 4.9 | 2.1 | 5.0 | 2.7 |
| 1956 p. | 4.7 | 1.5 | 4.9 | 2.4 |
| 1957 (est.) | 4.5 | 1.6 | 4.7 | 2.4 |

Source: U. S. Dept. of Commerce, CHEMICAL WEEK.



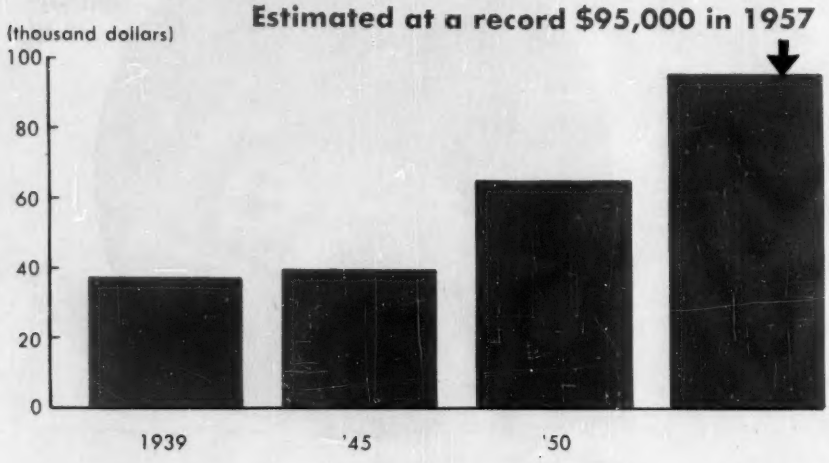

| | Pretax Profits (million $) | Pretax Profits Adjusted for Price Changes (million 1956 $) | Taxes (million $) | Taxes as a Percent of Pretax Profits | Profits After Taxes (million $) | Profits After Taxes Adjusted for Price Changes (million 1956 $) | Profits After Taxes as a Percent of Pretax Profits |
|---|---|---|---|---|---|---|---|
| 1932 | $ —6 | $ — | $ 5 | —% | $ —11 | $ — | —% |
| 1933 | 17 | 36 | 8 | 47.1 | 9 | 19 | 52.9 |
| 1934 | —38 | — | 4 | — | —42 | — | — |
| 1935 | 23 | 45 | 6 | 26.1 | 17 | 34 | 73.9 |
| 1936 | 162 | 317 | 22 | 13.6 | 140 | 274 | 86.4 |
| 1937 | 278 | 526 | 36 | 12.9 | 242 | 457 | 87.1 |
| 1938 | 77 | 148 | 16 | 20.8 | 61 | 117 | 79.2 |
| 1939 | 196 | 383 | 20 | 10.2 | 176 | 344 | 89.8 |
| 1940 | 277 | 537 | 50 | 18.1 | 227 | 440 | 81.9 |
| 1941 | 530 | 978 | 141 | 26.6 | 389 | 718 | 73.4 |
| 1942 | 640 | 1,065 | 214 | 33.4 | 426 | 709 | 66.6 |
| 1943 | 870 | 1,364 | 293 | 33.7 | 577 | 904 | 66.3 |
| 1944 | 601 | 927 | 130 | 21.6 | 471 | 727 | 78.4 |
| 1945 | 437 | 659 | 91 | 20.8 | 346 | 522 | 79.2 |
| 1946 | 796 | 1,107 | 203 | 25.5 | 593 | 825 | 74.5 |
| 1947 | 1,434 | 1,742 | 390 | 27.2 | 1,044 | 1,269 | 72.8 |
| 1948 | 2,260 | 2,551 | 622 | 27.5 | 1,638 | 1,849 | 72.5 |
| 1949 | 1,231 | 1,402 | 293 | 23.8 | 938 | 1,068 | 76.2 |
| 1950 | 1,726 | 1,948 | 514 | 29.8 | 1,212 | 1,368 | 70.2 |
| 1951 | 2,183 | 2,281 | 854 | 39.1 | 1,329 | 1,389 | 60.9 |
| 1952 | 1,542 | 1,577 | 510 | 33.1 | 1,032 | 1,055 | 66.9 |
| 1953 | 1,791 | 1,817 | 575 | 32.1 | 1,216 | 1,233 | 67.9 |
| 1954 | 1,718 | 1,735 | 473 | 27.5 | 1,245 | 1,258 | 72.5 |
| 1955 | 2,000 | 2,026 | 588 | 29.4 | 1,412 | 1,431 | 70.6 |
| 1956 p. | 1,962 | 1,962 | 463 | 23.6 | 1,499 | 1,499 | 76.4 |
| 1957 (est.) | 2,150 | 2,107 | 539 | 25.0 | 1,611 | 1,579 | 75.0 |

Source: U. S. Dept. of Commerce, CHEMICAL WEEK.

# Petroleum and Coal (cont.)

## Capital Investment per Production Worker

**Estimated at a record $95,000 in 1957**



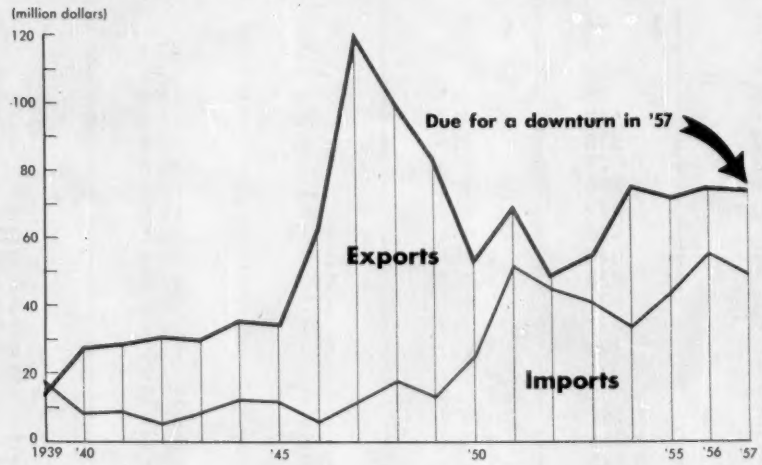

| | Capital Invested per Production Worker |
|---|---|
| 1944 | $40,956 |
| 1945 | 39,365 |
| 1946 | 39,710 |
| 1947 | 47,190 |
| 1948 | 55,597 |
| 1949 | 60,574 |
| 1950 | 64,640 |
| 1951 | 70,382 |
| 1952 | 76,298 |
| 1953 | 79,297 |
| 1954 | 85,000 |
| 1955 | 90,000 |
| 1956 | 93,000 |
| 1957 (est.) | 95,000 |

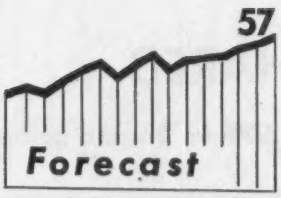
Source: Chase-Manhattan Bank; McGraw-Hill Dept. of Economics; Federal Reserve Board; Standard & Poor's; National Industrial Conference Board; CHEMICAL WEEK.

| | Coal-Tar Products | |
|---|---|---|
| | Exports (million $) | Imports (million $) |
| 1939 | $14.5 | $18.9 |
| 1940 | 28.4 | 9.0 |
| 1941 | 29.7 | 9.4 |
| 1942 | 31.0 | 5.9 |
| 1943 | 30.5 | 9.0 |
| 1944 | 36.6 | 12.5 |
| 1945 | 35.2 | 11.9 |
| 1946 | 63.6 | 6.2 |
| 1947 | 120.8 | 11.5 |
| 1948 | 101.0 | 18.2 |
| 1949 | 84.4 | 13.2 |
| 1950 | 54.5 | 25.9 |
| 1951 | 70.0 | 52.0 |
| 1952 | 49.8 | 45.9 |
| 1953 | 55.5 | 41.1 |
| 1954 | 75.8 | 34.5 |
| 1955 | 72.3 | 44.3 |
| 1956 p. | 75.3 | 56.0 |
| 1957 (est.) | 75.0 | 50.0 |

Source: U. S. Dept. of Commerce; U. S. Bureau of Labor Statistics; CHEMICAL WEEK.

## Coal-Tar Products Imports and Exports



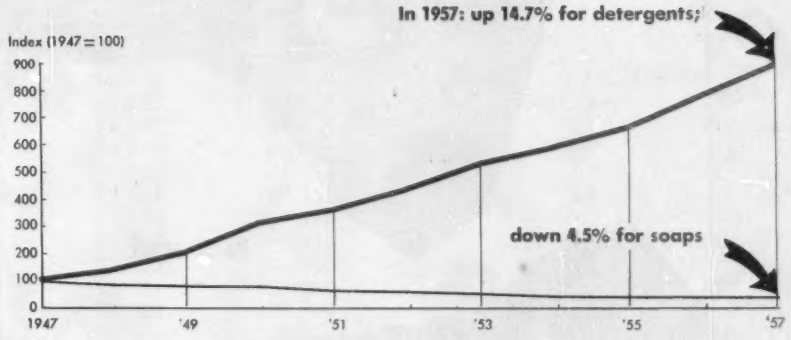



# Soap and Detergents

| | Sales Volume (1947=100) Soap | Detergents |
|---|---|---|
| 1947 | 100 | 100 |
| 1948 | 88 | 138 |
| 1949 | 83 | 204 |
| 1950 | 83 | 312 |
| 1951 | 69 | 359 |
| 1952 | 62 | 437 |
| 1953 | 55 | 534 |
| 1954 | 48 | 590 |
| 1955 | 45 | 662 |
| 1956 p. | 44 | 785 |
| 1957 (est.) | 42 | 900 |

Source: U. S. Bureau of Labor Statistics; Assn. of American Soap and Glycerine Producers; CHEMICAL WEEK.

## Sales Volume




## How the 1957 Market Will Split

| | Percent of Sales Soap | Detergents |
|---|---|---|
| 1947 | 90% | 10% |
| 1948 | 85 | 15 |
| 1949 | 78 | 22 |
| 1950 | 70 | 30 |
| 1951 | 63 | 37 |
| 1952 | 56 | 44 |
| 1953 | 48 | 52 |
| 1954 | 42 | 58 |
| 1955 | 38 | 62 |
| 1956 p. | 33 | 67 |
| 1957 (est.) | 30 | 70 |

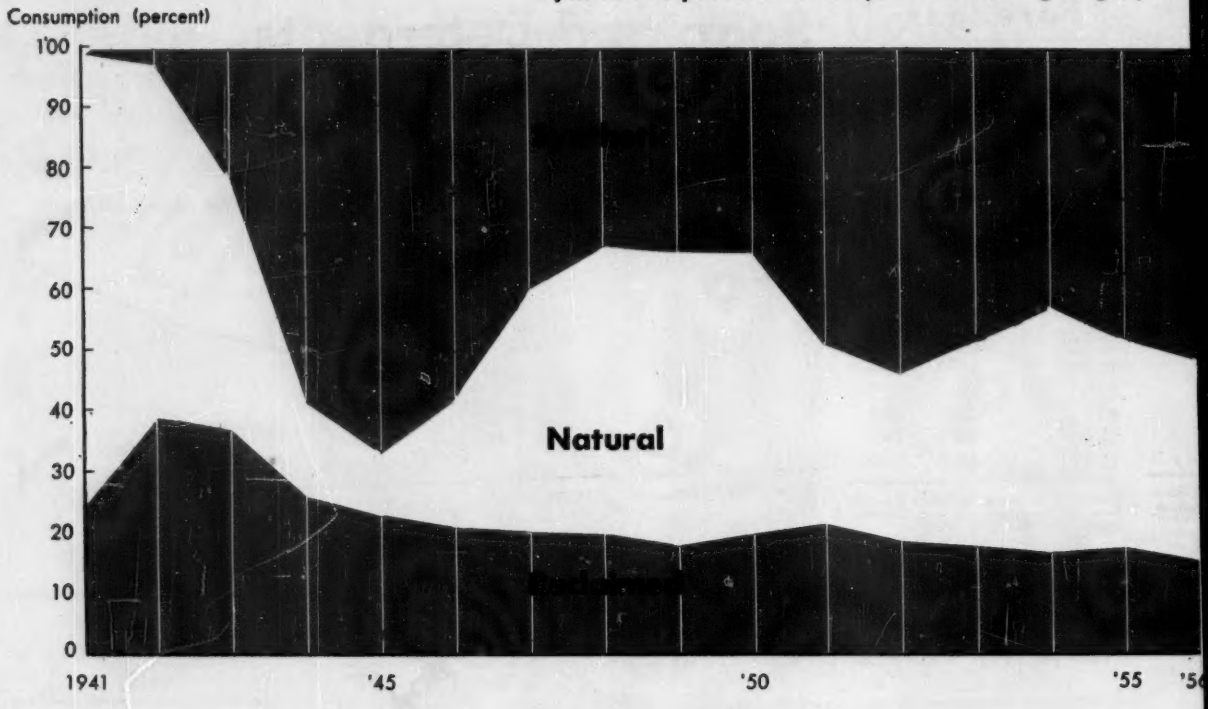
Source: U. S. Bureau of Labor Statistics; Assn. of American Soap and Glycerine Producers; CHEMICAL WEEK.

| | Total Employees (thousands) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) | Wholesale Price Index (1947-49=100) |
|---|---|---|---|---|---|---|---|
| 1947 | N. A. | N. A. | 42.8 | $1.386 | $59.32 | $72.08 | 103.9 |
| 1948 | N. A. | N. A. | 42.0 | 1.569 | 65.90 | 74.39 | 107.9 |
| 1949 | N. A. | N. A. | 40.9 | 1.627 | 66.54 | 75.79 | 88.2 |
| 1950 | N. A. | N. A. | 41.7 | 1.722 | 71.81 | 81.05 | 86.5 |
| 1951 | 51.6 | 33.4 | 41.5 | 1.858 | 77.19 | 80.66 | 98.2 |
| 1952 | 50.4 | 32.0 | 41.4 | 1.960 | 81.14 | 82.97 | 88.4 |
| 1953 | 51.1 | 31.9 | 41.1 | 2.090 | 85.90 | 87.12 | 87.8 |
| 1954 | 50.3 | 30.9 | 41.0 | 2.170 | 88.97 | 89.87 | 95.5 |
| 1955 | 49.8 | 30.1 | 40.3 | 2.280 | 91.88 | 93.09 | 95.9 |
| 1956 p. | 50.9 | 30.5 | 41.0 | 2.420 | 99.22 | 99.22 | 98.5 |
| 1957 (est.) | 51.5 | 31.0 | 41.0 | 2.520 | 103.32 | 101.25 | 100.0 |

Source: U. S. Bureau of Labor Statistics; Assn. of American Soap and Glycerine Producers; CHEMICAL WEEK.

# HOW THE RUBBER MARKET IS SHARED

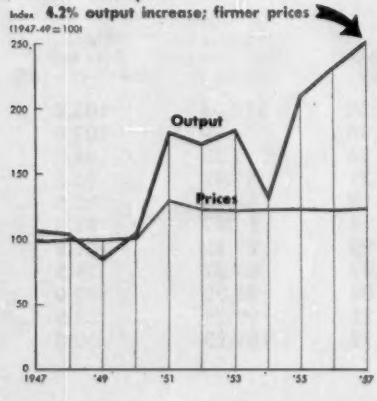
**Synthetic's piece: over 50% in '56 and going up**



# Rubber and Rubber Products

**Synthetic's Output and Price Records**

**In 1957, an estimated Index 4.2% output increase; firmer prices**




| | Output Index (1947-49 =100) | Wholesale Price Index (1947-49 =100) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|---|
| 1947 | 108 | 99.4 | 5.7 | 39.7 | $1.431 | $56.81 | $69.03 |
| 1948 | 105 | 100.3 | 5.3 | 39.9 | 1.576 | 62.88 | 70.97 |
| 1949 | 86 | 100.3 | 5.1 | 39.8 | 1.677 | 66.74 | 76.01 |
| 1950 | 105 | 102.0 | 5.7 | 40.8 | 1.763 | 71.93 | 81.19 |
| 1951 | 184 | 131.0 | 7.4 | 41.0 | 1.910 | 78.31 | 81.83 |
| 1952 | 175 | 124.7 | 7.4 | 40.3 | 2.000 | 80.60 | 82.41 |
| 1953 | 186 | 123.6 | 8.0 | 40.6 | 2.150 | 87.29 | 88.53 |
| 1954 | 136 | 124.8 | 7.3 | 40.7 | 2.230 | 90.76 | 91.68 |
| 1955 | 213 | 125.1 | 7.7 | 41.8 | 2.340 | 97.81 | 89.10 |
| 1956 p. | 235 | 124.7 | 7.9 | 41.3 | 2.530 | 104.49 | 104.49 |
| 1957 (est.) | 255 | 126.0 | 8.0 | 41.5 | 2.700 | 112.05 | 109.81 |

Source: U. S. Bureau of Labor Statistics; Federal Reserve Board; CHEMICAL WEEK.

| | Consumption Monthly Average (long tons) | | | | Share of Consumption | | |
|---|---|---|---|---|---|---|---|
| | Natural | Synthetic | Reclaimed | Total | Natural | Synthetic | Reclaimed |
| 1929 | 38,950 | | 18,085 | 57,035 | 68% | | 32% |
| 1930 | 31,333 | | 12,788 | 44,121 | 71 | | 29 |
| 1931 | 29,599 | | 10,250 | 39,849 | 74 | | 26 |
| 1932 | 28,062 | | 6,459 | 34,521 | 81 | | 19 |
| 1933 | 34,364 | | 7,084 | 41,448 | 83 | | 17 |
| 1934 | 38,540 | | 8,405 | 46,945 | 82 | | 18 |
| 1935 | 40,962 | | 9,794 | 50,756 | 81 | | 19 |
| 1936 | 47,917 | | 11,791 | 59,708 | 80 | | 20 |
| 1937 | 45,300 | | 13,500 | 58,800 | 77 | | 23 |
| 1938 | 36,419 | | 10,067 | 46,486 | 78 | | 22 |
| 1939 | 49,333 | 163 | 14,167 | 63,663 | 78 | | 22 |
| 1940 | 54,042 | 242 | 15,854 | 70,138 | 77 | | 23 |
| 1941 | 64,583 | 522 | 20,936 | 86,041 | 75 | 1% | 24 |
| 1942 | 31,399 | 1,471 | 21,235 | 54,105 | 58 | 3 | 39 |
| 1943 | 26,470 | 14,241 | 24,257 | 64,968 | 41 | 22 | 37 |
| 1944 | 12,009 | 47,223 | 20,924 | 80,156 | 15 | 59 | 26 |
| 1945 | 8,786 | 57,798 | 20,086 | 86,670 | 10 | 67 | 23 |
| 1946 | 23,133 | 63,475 | 22,951 | 109,559 | 21 | 58 | 21 |
| 1947 | 46,888 | 46,639 | 24,033 | 117,560 | 40 | 40 | 20 |
| 1948 | 52,278 | 36,839 | 21,759 | 110,876 | 47 | 33 | 20 |
| 1949 | 47,877 | 34,532 | 18,557 | 100,966 | 48 | 34 | 18 |
| 1950 | 60,022 | 44,857 | 25,311 | 130,190 | 46 | 34 | 20 |
| 1951 | 37,835 | 63,241 | 28,843 | 129,919 | 29 | 49 | 22 |
| 1952 | 37,821 | 67,253 | 23,334 | 128,408 | 29 | 52 | 19 |
| 1953 | 46,123 | 65,403 | 23,754 | 135,280 | 34 | 48 | 18 |
| 1954 | 49,690 | 53,061 | 20,754 | 123,505 | 40 | 43 | 17 |
| 1955 | 52,705 | 74,399 | 26,305 | 153,409 | 34 | 48 | 18 |
| 1956 p. | 48,121 | 73,286 | 22,780 | 144,187 | 33 | 51 | 16 |

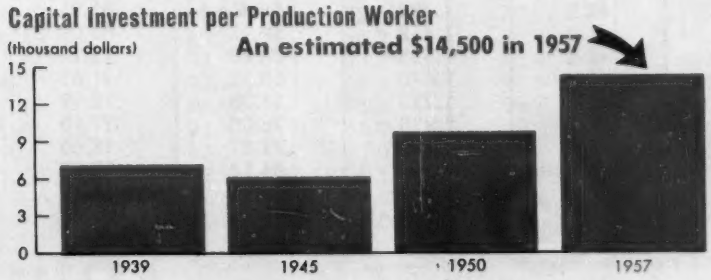
Source: National Rubber Manufacturers' Assn., CHEMICAL WEEK.

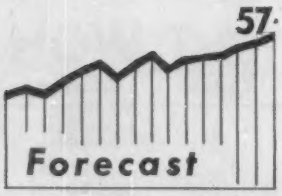
| | Output Index 1947-49 =100 | Capacity Index 1950=100 | Capital Expenditures* (million $) | Crude Rubber Wholesale Price Index (1947-49=100) |
|---|---|---|---|---|
| 1945 | N. A. | N. A. | $118 | N. A. |
| 1946 | N. A. | 74 | 139 | N. A. |
| 1947 | 106 | N. A. | 143 | 103.0 |
| 1948 | 102 | 92 | 102 | 103.4 |
| 1949 | 92 | 96 | 81 | 93.6 |
| 1950 | 119 | 100 | 102 | 157.3 |
| 1951 | 119 | 104 | 150 | 215.1 |
| 1952 | 116 | 116 | 154 | 157.8 |
| 1953 | 128 | 123 | 161 | 121.6 |
| 1954 | 115 | 132 | 131 | 123.1 |
| 1955 | 143 | 144 | 150 | 156.8 |
| 1956 (est.) | 132 | 156 | 224 | 148.5 |
| 1957 (est.) | 145 | 165 | 215 | 150.0 |
| 1958 (est.) | N. A. | N. A. | 234 | N. A. |
| 1959 (est.) | N. A. | 184 | 194 | N. A. |

Source: Federal Reserve Board, McGraw-Hill Dept. of Economics, U. S. Dept. of Commerce, U. S. Bureau of Labor Statistics, National Industrial Conference Board, CHEMICAL WEEK.
*See CW, Dec. 15, 1956

| | Capital Investment Per Production Worker |
|---|---|
| 1939 | $7,237 |
| 1940 | 7,145 |
| 1941 | 6,536 |
| 1942 | 7,730 |
| 1943 | 6,606 |
| 1944 | 6,534 |
| 1945 | 6,292 |
| 1946 | 6,660 |
| 1947 | 7,710 |
| 1948 | 8,388 |
| 1949 | 9,187 |
| 1950 | 9,912 |
| 1951 | 10,731 |
| 1952 | 12,097 |
| 1953 | 11,819 |
| 1954 | 13,650 |
| 1955 | 14,019 |
| 1956 p. | 14,300 |
| 1957 (est.) | 14,500 |

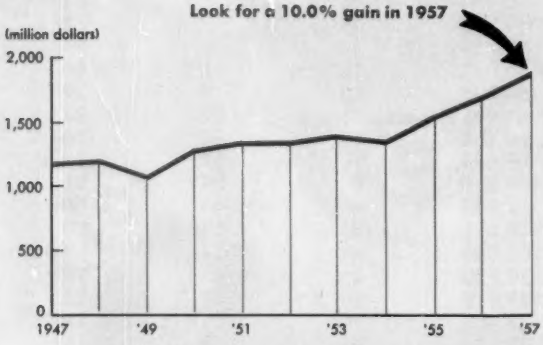
**Capital Investment per Production Worker**






# Paint

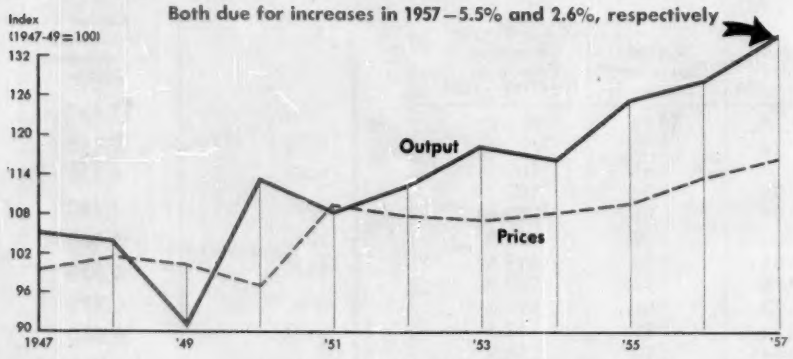
## SALES




| | Sales (million $) | Distribution Industry (percent) | Distribution Trade (percent) | Exports (million dollars) | Imports (million dollars) |
|---|---|---|---|---|---|
| 1947 | $1,175.4 | 53% | 47% | $85.5 | $16 |
| 1948 | 1,192.8 | 53 | 47 | 80.2 | 20 |
| 1949 | 1,064.8 | 55 | 45 | 76.4 | 14 |
| 1950 | 1,276.3 | 55 | 45 | 79.4 | 36 |
| 1951 | 1,339.1 | 60 | 40 | 103.2 | 53 |
| 1952 | 1,340.8 | 62 | 38 | 78.6 | 36 |
| 1953 | 1,402.7 | 60 | 40 | 84.4 | 51 |
| 1954 | 1,360.9 | 62 | 38 | 105.1 | 52 |
| 1955 | 1,564.0 | 60 | 40 | 106.8 | 62 |
| 1956 p. | 1,704.0 | 61 | 39 | 110.0 | 80 |
| 1957 (est.) | 1,875.0 | 60 | 40 | 115.0 | 85 |

Source: U. S. Bureau of Labor Statistics, Federal Reserve Board ,U. S. Dept. of Commerce, CHEMICAL WEEK.

## OUTPUT AND PRICES

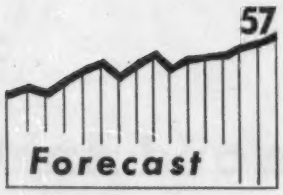



| | Output Index (1947-49=100) | Wholesale Price Index (1947-49=100) |
|---|---|---|
| 1948 | 104 | 101.0 |
| 1949 | 91 | 99.9 |
| 1950 | 113 | 96.8 |
| 1951 | 108 | 108.9 |
| 1952 | 112 | 107.3 |
| 1953 | 118 | 106.7 |
| 1954 | 116 | 107.9 |
| 1955 | 125 | 109.2 |
| 1956 p. | 128 | 113.0 |
| 1957 (est.) | 135 | 116.0 |

Source: U. S. Bureau of Labor Statistics, Federal Reserve Board, U. S. Dept. of Commerce, CHEMICAL WEEK.

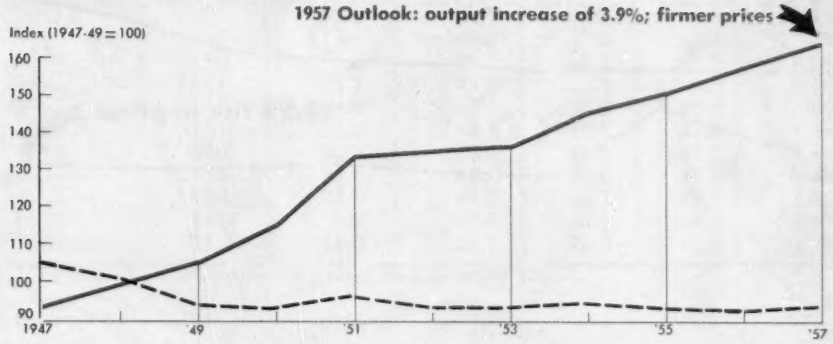
| | Total Employees (thousands) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|
| 1947 | 68.3 | 45.9 | 42.3 | $1.261 | $53.34 | $64.81 |
| 1948 | 70.0 | 46.4 | 42.2 | 1.384 | 58.40 | 65.91 |
| 1949 | 65.5 | 42.2 | 41.0 | 1.458 | 59.78 | 68.09 |
| 1950 | 68.9 | 45.1 | 42.3 | 1.532 | 64.80 | 73.14 |
| 1951 | 73.6 | 47.5 | 41.8 | 1.640 | 68.55 | 71.63 |
| 1952 | 73.1 | 46.6 | 41.5 | 1.720 | 71.38 | 72.99 |
| 1953 | 74.2 | 46.9 | 41.8 | 1.820 | 76.08 | 77.16 |
| 1954 | 70.9 | 44.7 | 41.2 | 1.890 | 77.87 | 78.66 |
| 1955 | 73.4 | 46.5 | 42.3 | 1.990 | 84.18 | 85.29 |
| 1956 p. | 74.3 | 46.3 | 41.5 | 2.080 | 86.32 | 86.32 |
| 1957 (est.) | 75.5 | 47.0 | 42.0 | 2.160 | 90.72 | 88.91 |

Source: U.S. Bureau of Labor Statistics, Federal Reserve Board, U.S. Dept. of Commerce, CHEMICAL WEEK.




# Drugs and Medicinals

## OUTPUT AND PRICES



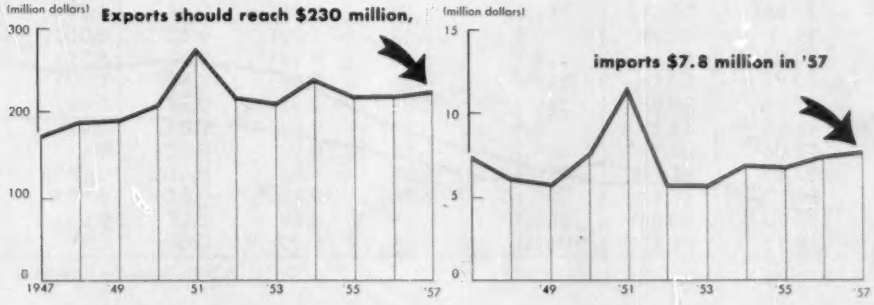

| | Output Index (1947-49 =100) | Wholesale Price Index (1947-49 =100) |
|---|---|---|
| 1948 | 100 | 101.0 |
| 1949 | 106 | 93.6 |
| 1950 | 116 | 92.5 |
| 1951 | 135 | 95.6 |
| 1952 | 136 | 92.5 |
| 1953 | 137 | 92.9 |
| 1954 | 146 | 93.9 |
| 1955 | 152 | 92.8 |
| 1956 p. | 159 | 92.2 |
| 1957 (est.) | 165 | 93.0 |

Source: U. S. Bureau of Labor Statistics; U. S. Dept. of Commerce; CHEMICAL WEEK.

## IMPORTS AND EXPORTS

| | Exports (million dollars) | Imports (million dollars) |
|---|---|---|
| 1947 | $176.7 | $7.6 |
| 1948 | 193.2 | 6.2 |
| 1949 | 198.2 | 5.9 |
| 1950 | 212.5 | 7.8 |
| 1951 | 281.4 | 11.8 |
| 1952 | 222.1 | 5.9 |
| 1953 | 216.6 | 5.8 |
| 1954 | 243.8 | 7.1 |
| 1955 | 226.5 | 6.9 |
| 1956 p. | 225.6 | 7.6 |
| 1957 est. | 230.0 | 7.8 |

Source: U. S. Bureau of Labo . Statistics; U. S. Dept. of Commerce; CHEMICAL WEEK.

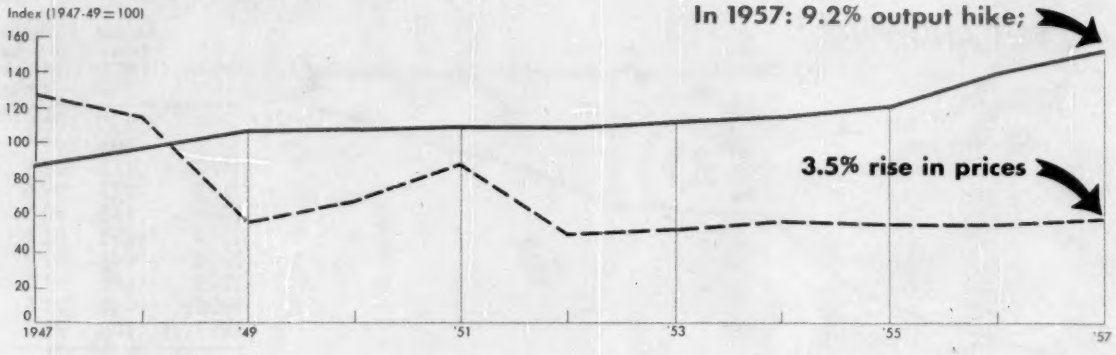



| | Total Employees (thousands) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|
| 1947 | 82.9 | 55.5 | 40.7 | $1.185 | $48.23 | $58.60 |
| 1948 | 82.9 | 55.5 | 40.6 | 1.323 | 53.71 | 60.62 |
| 1949 | 85.5 | 56.3 | 40.4 | 1.401 | 56.60 | 64.46 |
| 1950 | 87.5 | 57.3 | 40.9 | 1.457 | 59.59 | 67.26 |
| 1951 | 95.2 | 62.4 | 41.1 | 1.520 | 62.47 | 65.28 |
| 1952 | 96.5 | 61.3 | 39.9 | 1.590 | 63.44 | 64.87 |
| 1953 | 91.5 | 56.9 | 40.9 | 1.680 | 68.71 | 69.69 |
| 1954 | 92.0 | 57.0 | 41.0 | 1.760 | 72.16 | 72.89 |
| 1955 | 92.5 | 56.1 | 40.8 | 1.840 | 75.07 | 76.06 |
| 1956 p. | 94.0 | 55.2 | 40.9 | 1.910 | 78.12 | 78.12 |
| 1957 (est.) | 95.0 | 56.0 | 41.0 | 1.990 | 81.59 | 79.96 |

Source: U.S. Bureau of Labor Statistics; U.S. Dept. of Commerce; CHEMICAL WEEK.

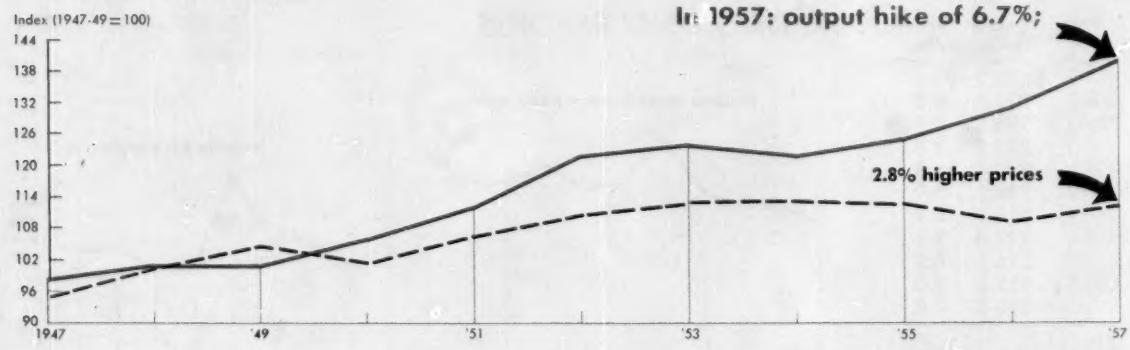
# Vegetable and Animal

OUTPUT AND PRICES



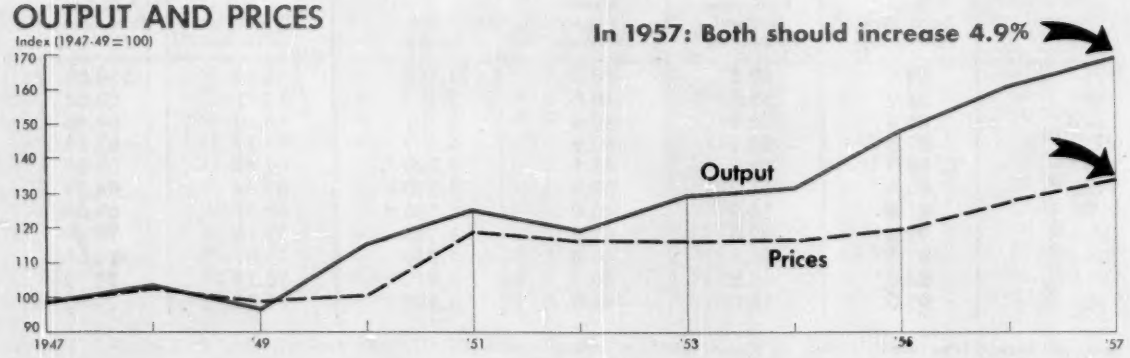

# Fertilizers

OUTPUT AND PRICES




# Pulp, Paper and Board

OUTPUT AND PRICES



# Oils and Fats

| | Output Index (1947-49 =100) | Wholesale Price Index (1947-49 =100) | Total Employees (thousands) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|---|---|
| 1947 | 90 | 127.6 | 49.7 | 41.8 | 46.8 | $0.987 | $46.19 | $56.12 |
| 1948 | 100 | 115.9 | 49.8 | 41.2 | 47.4 | 1.063 | 50.39 | 56.87 |
| 1949 | 110 | 56.6 | 49.0 | 40.2 | 47.2 | 1.083 | 51.12 | 58.22 |
| 1950 | 111 | 68.7 | 47.0 | 37.7 | 45.5 | 1.175 | 53.46 | 60.34 |
| 1951 | 112 | 88.8 | 46.8 | 36.2 | 46.0 | 1.290 | 59.34 | 62.01 |
| 1952 | 112 | 50.0 | 44.3 | 32.9 | 45.9 | 1.340 | 61.51 | 62.89 |
| 1953 | 116 | 52.7 | 43.1 | 31.6 | 45.7 | 1.420 | 64.89 | 66.35 |
| 1954 | 118 | 57.8 | 42.4 | 30.3 | 45.8 | 1.490 | 68.24 | 68.93 |
| 1955 | 124 | 56.6 | 41.5 | 28.7 | 45.6 | 1.560 | 71.14 | 72.08 |
| 1956 p. | 142 | 56.0 | 41.0 | 28.8 | 44.6 | 1.670 | 74.48 | 74.48 |
| 1957 (est.) | 155 | 58.0 | 41.5 | 29.3 | 45.0 | 1.770 | 79.65 | 78.06 |

Source: U. S. Bureau of Labor Statistics; Federal Reserve Board; CHEMICAL WEEK.

| | Output Index (1947-49 =100) | Wholesale Price Index Fertilizer Materials (1947-49 =100) | All Employees (thousands) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|---|---|
| 1947 | 98 | 95.0 | 36.7 | 31.4 | 42.4 | $0.945 | $40.07 | $48.69 |
| 1948 | 101 | 100.6 | 35.9 | 30.2 | 41.5 | 1.020 | 42.33 | 47.79 |
| 1949 | 101 | 104.6 | 34.3 | 28.6 | 41.6 | 1.075 | 44.72 | 50.93 |
| 1950 | 106 | 101.7 | 34.5 | 28.2 | 41.3 | 1.138 | 47.00 | 53.05 |
| 1951 | 112 | 106.3 | 36.0 | 28.9 | 42.2 | 1.240 | 52.33 | 54.68 |
| 1952 | 122 | 110.6 | 36.9 | 29.2 | 42.6 | 1.320 | 56.23 | 57.49 |
| 1953 | 124 | 112.9 | 37.2 | 29.0 | 42.4 | 1.400 | 59.36 | 60.20 |
| 1954 | 122 | 113.0 | 36.8 | 28.3 | 42.4 | 1.450 | 61.48 | 62.10 |
| 1955 | 125 | 112.6 | 36.9 | 28.0 | 42.5 | 1.500 | 63.75 | 64.59 |
| 1956 p | 131 | 109.0 | 37.3 | 28.6 | 42.3 | 1.630 | 68.95 | 68.95 |
| 1957 (est.) | 140 | 112.0 | 38.0 | 29.0 | 42.5 | 1.750 | 74.38 | 72.89 |

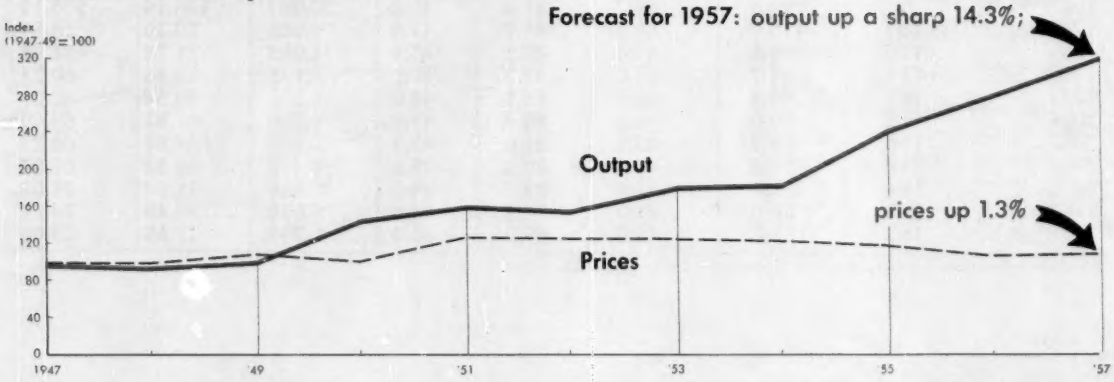
Source: U. S. Bureau of Labor Statistics; Federal Reserve Board; CHEMICAL WEEK.

| | Output Index (1947-49 =100) | Wholesale Price Index (1947-49 =100) | All Employees (thousands) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|---|---|
| 1947 | 99 | 98.6 | 234.0 | 206.9 | 44.2 | $1.224 | $54.10 | $65.74 |
| 1948 | 104 | 102.9 | 242.8 | 212.7 | 44.0 | 1.361 | 59.88 | 67.58 |
| 1949 | 97 | 98.5 | 232.6 | 202.5 | 42.4 | 1.411 | 59.83 | 68.14 |
| 1950 | 116 | 100.9 | 245.5 | 213.5 | 43.9 | 1.482 | 65.06 | 73.43 |
| 1951 | 126 | 119.6 | 257.6 | 222.5 | 44.4 | 1.600 | 71.04 | 74.23 |
| 1952 | 120 | 116.5 | 252.8 | 215.7 | 43.6 | 1.690 | 73.68 | 75.34 |
| 1953 | 130 | 116.1 | 258.3 | 219.6 | 44.0 | 1.790 | 78.76 | 79.88 |
| 1954 | 132 | 116.3 | 262.9 | 222.2 | 43.5 | 1.840 | 80.04 | 80.85 |
| 1955 | 149 | 119.3 | 272.9 | 228.9 | 44.3 | 1.940 | 85.94 | 87.07 |
| 1956 p. | 162 | 127.2 | 287.4 | 238.7 | 44.3 | 2.060 | 91.26 | 91.26 |
| 1957 (est.) | 170 | 133.5 | 300.0 | 247.0 | 44.5 | 2.180 | 97.01 | 95.07 |

Source: U. S. Bureau of Labor Statistics; Federal Reserve Board; CHEMICAL WEEK.

# Plastics

## Prices and Output



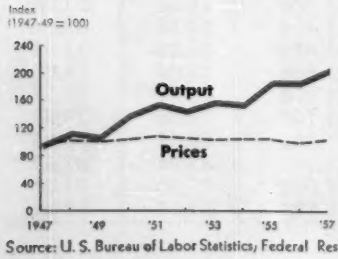

| | Output Index (1947-49 = 100) | Wholesale Prices (1947-49 = 100) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|---|
| 1947 | 100 | 99.9 | 22.2 | 41.6 | $1.297 | $53.96 | $65.57 |
| 1948 | 98 | 99.4 | 21.8 | 41.4 | 1.419 | 58.75 | 66.31 |
| 1949 | 103 | 100.8 | 19.7 | 40.4 | 1.494 | 60.36 | 68.75 |
| 1950 | 147 | 101.4 | 20.5 | 41.8 | 1.568 | 65.54 | 73.97 |
| 1951 | 163 | 126.5 | 22.2 | 42.0 | 1.730 | 72.66 | 75.92 |
| 1952 | 157 | 125.8 | 30.4 | 41.7 | 1.830 | 76.31 | 78.03 |
| 1953 | 183 | 126.0 | 33.1 | 42.5 | 1.950 | 82.88 | 84.06 |
| 1954 | 184 | 124.9 | 30.4 | 41.8 | 2.000 | 83.60 | 84.44 |
| 1955 | 242 | 119.3 | 32.0 | 42.3 | 2.090 | 88.41 | 89.57 |
| 1956 p. | 280 | 108.6 | 32.8 | 42.5 | 2.220 | 94.35 | 94.35 |
| 1957 est. | 320 | 110.0 | 33.5 | 42.5 | 2.320 | 98.60 | 96.63 |

Source: U. S. Bureau of Labor Statistics; Federal Reserve Board; CHEMICAL WEEK.

# Synthetic Fibers

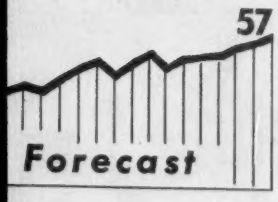
## Prices and Output

Coming in 1957: 10.2% output hike; price boost of 5.0%




| | Output Index (1947-49 = 100) | Wholesale Price Index (1947-49 = 100) | Production Workers (thousands) | Weekly Hours Worked | Hourly Earnings | Weekly Pay | Weekly Pay Adjusted for Price Changes (1956 $) |
|---|---|---|---|---|---|---|---|
| 1947 | 90 | 95.2 | 57.9 | 39.5 | $1.241 | $49.02 | $59.56 |
| 1948 | 108 | 103.2 | 59.9 | 39.5 | 1.343 | 53.05 | 59.88 |
| 1949 | 102 | 101.6 | 52.7 | 38.6 | 1.430 | 55.20 | 62.87 |
| 1950 | 135 | 103.9 | 54.7 | 39.3 | 1.486 | 58.40 | 65.91 |
| 1951 | 151 | 109.7 | 55.6 | 39.4 | 1.593 | 62.76 | 65.58 |
| 1952 | 141 | 107.2 | 53.8 | 39.8 | 1.670 | 66.47 | 67.97 |
| 1953 | 156 | 104.6 | 58.6 | 39.7 | 1.760 | 69.87 | 70.86 |
| 1954 | 152 | 104.3 | 53.8 | 40.1 | 1.820 | 72.98 | 73.72 |
| 1955 | 186 | 105.6 | 56.8 | 40.3 | 1.870 | 75.36 | 76.35 |
| 1956 p. | 186 | 100.0 | 58.1 | 40.4 | 1.990 | 80.40 | 80.40 |
| 1957 est. | 205 | 105.0 | 60.0 | 40.5 | 2.100 | 85.05 | 83.35 |

Source: U. S. Bureau of Labor Statistics; Federal Reserve Board; CHEMICAL WEEK.




# Selected Inorganic Chemicals Production

| | Chemical Lime (thousand short tons) | Potash Equivalent $K_2O$ (thousand short tons) | Titanium Dioxide Content (thousand short tons) | Chlorine Gas (thousand short tons) | Synthetic Anhydrous Ammonia (thousand short tons) | Caustic Soda (thousand short tons) | Soda Ash (thousand short tons) | Sulfuric Acid (million short tons) | Hydrochloric Acid (thousand short tons) | Phosphoric Acid (thousand short tons) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1929 | 1,795.0 | 61.6 | — | 219.0 | 173.3 | 761.8 | 2,268.2 | 5,314.5 | 81.3 | 17.3 |
| 1930 | 1,447.0 | 61.3 | 0.9 | 205.0 | — | — | — | — | — | — |
| 1931 | 1,463.2 | 63.9 | 1.2 | 202.0 | 127.1 | 658.9 | 2,275.4 | 3,809.3 | 54.9 | 19.0 |
| 1932 | 1,118.6 | 62.0 | 2.2 | 193.0 | — | — | — | — | — | — |
| 1933 | 1,486.0 | 143.4 | 2.9 | 236.0 | 150.2 | 687.0 | 2,317.0 | 3,599.5 | 62.6 | 24.7 |
| 1934 | 1,663.6 | 144.3 | 3.5 | 285.0 | — | — | — | — | — | — |
| 1935 | 1,592.3 | 192.8 | 4.4 | 330.0 | 138.8 | 759.4 | 2,508.9 | 4,264.9 | 87.1 | 45.4 |
| 1936 | 1,924.5 | 247.3 | 4.4 | 380.0 | — | — | — | — | — | — |
| 1937 | 2,151.4 | 284.5 | 4.4 | 446.3 | 223.0 | 968.7 | 3,037.4 | 4,974.6 | 121.4 | 78.3 |
| 1938 | 1,761.6 | 317.0 | 4.4 | 440.0 | — | — | — | — | — | — |
| 1939 | 2,220.0 | 312.2 | 9.7 | 514.4 | 310.8 | 1,045.4 | 2,947.9 | 4,795.0 | 140.3 | 150.8 |
| 1940 | 2,643.8 | 397.7 | 12.0 | 605.0 | 465.0 | — | — | — | — | — |
| 1941 | 3,561.2 | 524.9 | 13.1 | 800.8 | 501.3 | 1,429.3 | 3,724.4 | 6,770.1 | 227.7 | 662.6 |
| 1942 | 3,776.1 | 679.2 | 43.8 | 989.8 | 543.3 | 1,574.2 | 3,924.8 | 7,754.0 | 296.9 | 617.4 |
| 1943 | 4,307.8 | 739.1 | 97.9 | 1,214.4 | 543.4 | 2,249.1 | 4,571.1 | 8,422.1 | 342.5 | 636.8 |
| 1944 | 4,196.4 | 834.6 | 134.4 | 1,262.4 | 543.7 | 2,327.8 | 4,718.0 | 9,242.2 | 381.0 | 965.6 |
| 1945 | 3,810.3 | 874.2 | 148.3 | 1,192.1 | 548.7 | 2,321.8 | 4,556.8 | 9,522.1 | 407.6 | 730.9 |
| 1946 | 3,684.5 | 931.8 | 137.7 | 1,651.1 | 725.5 | 2,292.2 | 4,493.6 | 8,649.2 | 341.6 | 894.6 |
| 1947 | 4,035.2 | 1,029.9 | 162.1 | 1,443.2 | 1,114.0 | 2,596.5 | 4,801.1 | 10,780.2 | 442.6 | 1,062.4 |
| 1948 | 4,255.4 | 1,139.9 | 186.7 | 1,640.0 | 1,089.0 | 2,937.7 | 4,872.9 | 11,455.9 | 458.3 | 1,193.5 |
| 1949 | 3,619.0 | 1,118.4 | 195.9 | 1,767.0 | 1,294.1 | 2,649.5 | 4,119.3 | 11,431.9 | 494.0 | 1,394.5 |
| 1950 | 4,137.3 | 1,287.7 | 237.0 | 2,084.2 | 1,565.6 | 2,989.1 | 4,329.6 | 13,029.4 | 618.8 | 1,634.6 |
| 1951 | 4,711.3 | 1,420.3 | 272.2 | 2,517.9 | 1,777.1 | 3,756.9 | 5,457.9 | 13,372.3 | 695.6 | 1,845.7 |
| 1952 | 4,561.4 | 1,665.1 | 272.0 | 2,608.7 | 2,052.1 | 3,540.3 | 4,763.6 | 13,310.0 | 683.7 | 2,061.1 |
| 1953 | 5,883.7 | 1,911.9 | 264.2 | 2,797.3 | 2,287.8 | 3,685.6 | 5,303.1 | 14,002.5 | 773.5 | 2,647.0 |
| 1954 | 5,654.7 | 1,948.7 | 277.5 | 2,895.1 | 2,719.7 | 3,913.6 | 5,212.7 | 14,000.5 | 740.6 | 2,957.9 |
| 1955 | 5,340.0 | 2,064.8 | 307.2 | 3,407.9 | 3,163.0 | 4,450.0 | 5,596.2 | 16,758.3 | 842.6 | 3,440.4 |
| 1956 p. | 5,500.0 | 2,100.0 | 350.0 | 3,670.0 | 3,370.0 | 4,625.0 | 5,600.0 | 16,040.0 | 885.0 | 3,625.0 |

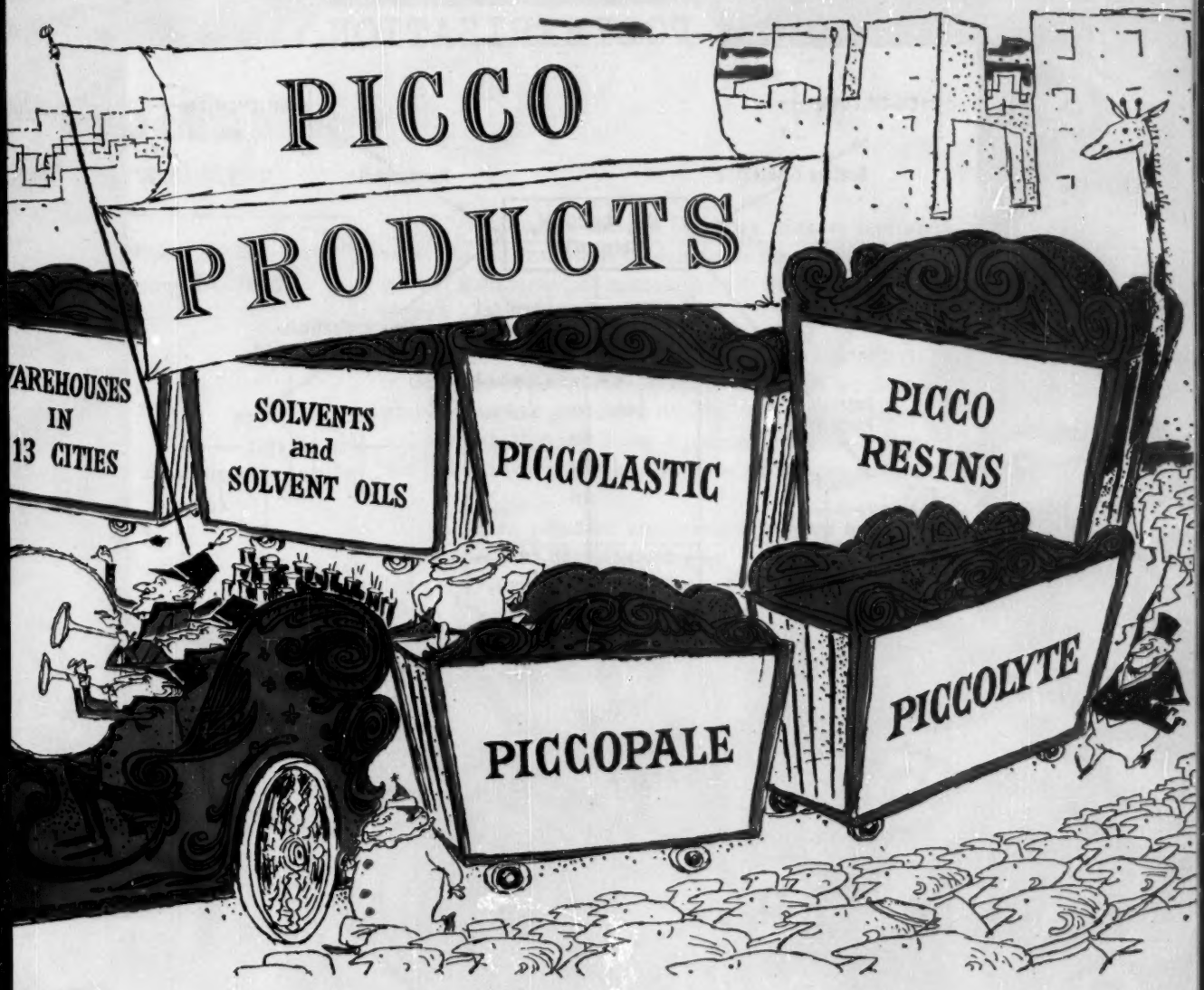
Source: U. S. Dept. of Commerce; Census of Manufactures; U. S. Bureau of Mines; CHEMICAL WEEK.

# Selected Organic Chemicals Production

| | Benzene Chemical Grade (million gallons) | Naphthalene (million pounds) | Phthalic Anhydride (million pounds) | Phenol (million pounds) | Aniline (million pounds) | Acetone (million pounds) | Refined Glycerine (million pounds) | Acetylene (million cu. ft.) | Formaldehyde 37% HCHO by weight (million pounds) | Ethylene (million pounds) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1929 | 25.1 | 39.2 | 9.2 | 24.2 | 33.7 | 36.0 | 141.9 | 969.5 | | |
| 1930 | 19.9 | 31.7 | 6.7 | 21.1 | 26.4 | 36.0 | 116.1 | | | |
| 1931 | 14.8 | 35.0 | | 18.0 | | 25.9 | 130.0 | 743.0 | | |
| 1932 | 11.4 | 25.8 | 6.3 | 14.0 | 19.4 | 39.0 | 101.2 | | | |
| 1933 | 19.4 | 30.6 | 14.1 | 33.2 | 25.5 | 47.5 | 128.0 | 754.1 | | |
| 1934 | 23.8 | 37.9 | 20.7 | 44.9 | 28.6 | 60.0 | 123.9 | | | |
| 1935 | 24.1 | 47.7 | 23.4 | 43.4 | 32.6 | 68.9 | 119.9 | 1,143.2 | | |
| 1936 | 19.4 | 89.5 | 31.2 | 48.7 | 38.5 | 94.6 | 126.5 | | | |
| 1937 | 26.8 | 116.0 | 45.2 | 65.7 | 38.9 | 124.0 | 139.0 | 1,511.4 | | |
| 1938 | 17.7 | 53.6 | 27.7 | 44.5 | 26.7 | 110.0 | 129.5 | | | |
| 1939 | 30.5 | 104.1 | 44.3 | 68.6 | 41.8 | 160.0 | 146.8 | 1,291.2 | 134.5 | |
| 1940 | 36.6 | 159.6 | 58.0 | 96.1 | 55.7 | 210.5 | 155.9 | | 180.9 | |
| 1941 | 44.8 | 197.8 | 81.3 | 115.0 | 70.0 | 259.1 | 194.3 | 2,384.6 | 309.9 | |
| 1942 | 85.3 | 250.9 | 94.8 | 127.3 | 100.9 | 338.2 | 18(.6 | 3,236.2 | 347.5 | |
| 1943 | 142.0 | 305.3 | 114.1 | 195.0 | 94.3 | 347.6 | 159.7 | 4,532.4 | 522.9 | 166.2 |
| 1944 | 178.4 | 286.2 | 122.7 | 202.0 | 89.1 | 384.8 | 196.1 | 5,536.1 | 522.4 | 272.2 |
| 1945 | 156.2 | 287.6 | 125.8 | 205.1 | 87.2 | 349.8 | 172.7 | 5,100.0 | 509.6 | 308.2 |
| 1946 | 136.4 | 242.3 | 108.7 | 199.1 | 88.4 | 335.9 | 148.6 | | 458.9 | 294.6 |
| 1947 | 167.7 | 314.7 | 137.5 | 265.3 | 107.0 | 397.2 | 191.2 | 3,007.0 | 615.9 | 342.0 |
| 1949 | 173.9 | 327.6 | 158.8 | 297.3 | 92.1 | 470.6 | 197.3 | | 617.2 | 383.4 |
| 1949 | 133.3 | 236.0 | 149.7 | 224.5 | 72.0 | 413.0 | 200.1 | 4,750.0 | 549.7 | 1,129.3 |
| 1950 | 186.2 | 288.5 | 216.2 | 312.1 | 98.0 | 482.5 | 230.0 | 5,331.0 | 835.1 | 1,821.9 |
| 1951 | 265.7 | 355.7 | 248.0 | 388.4 | 122.7 | 559.7 | 215.0 | 5,851.0 | 997.5 | 1,798.9 |
| 1952 | 251.7 | 322.5 | 228.6 | 337.8 | 95.9 | 439.6 | 199.5 | 5,978.0 | 1,029.3 | 1,809.5 |
| 1953 | 272.7 | 315.8 | 226.6 | 382.4 | 113.5 | 519.0 | 237.9 | 6,755.0 | 1,118.7 | 2,135.7 |
| 1954 | 256.8 | 302.2 | 253.8 | 417.5 | 97.3 | 477.5 | 215.3 | 6,197.0 | 1,032.0 | 2,344.6 |
| 1955 | 307.5 | 477.2 | 331.4 | 516.7 | 131.8 | 538.8 | 240.0 | 8,204.0 | 1,259.0 | 3,048.2 |
| 1956 p. | 332.5 | 394.0 | 329.0 | 545.0 | 143.0 | 600.0 | 250.0 | 8,840.0 | 1,370.0 | 3,300.0 |

Source: U. S. Tariff Commission; Census of Manufactures; U. S. Dept. of Commerce; CHEMICAL WEEK.

**Reprints of this special forecast report are available for $1.50 each from CHEMICAL WEEK, Reprint Dept., Room 2400, 330 West 42 St., New York 36, N.Y. Bulk rates on request.**

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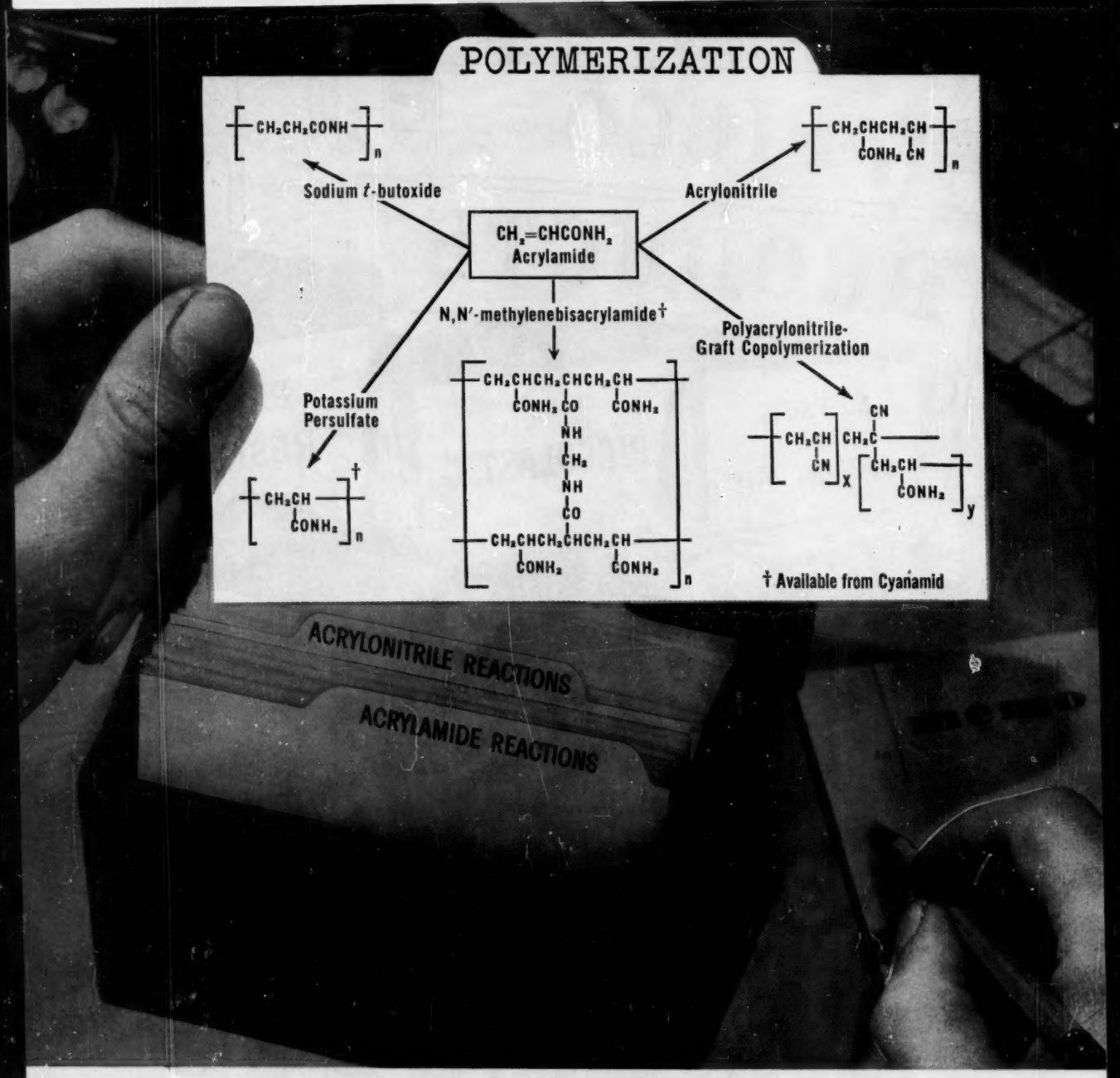


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# Technology
## Newsletter

CHEMICAL WEEK
December 29, 1956

**Celanese's decision last week to move into acrylate production** with a 15-million lbs./year plant is the latest evidence that the firm means it when it declares that its main growth emphasis will be on chemicals and plastics (*CW, Sept. 22, p. 22*).

More than that, it may signal the culmination of years of research in that field by Goodrich Chemical. Goodrich won't talk at all about the project ("we had nothing to do with their announcement"). And Celanese will say only that it is using a process that's not now used commercially. But it doesn't deny that it is licensing the process from Goodrich.

**Just what the arrangement involves is an open question.** But it would seem to be a happy one for both parties: Goodrich would at long last get a return from a fine piece of research and process development in a field in which it does not have a dominating raw materials position; and Celanese gets a chance to take advantage of Goodrich's work and its own raw materials strength—in a fast-growing field.

Goodrich's work centered around the production of acrylic acid by way of β-propiolactone *(Chemical Industries, Oct. '50, p. 552)*. The acid can be converted into the desired ester by reaction with the proper alcohol (methanol, ethanol, butanol).

Goodrich has also worked up a synthesis for the propiolactone *(CI, Dec. '47, p. 977)*: formaldehyde and ketene (which can be made from acetone or acetic acid) react to form the lactone, which is converted into acrylic acid by a patented pyrolytic process.

**Such a process would fit in nicely** with Celanese's present operations, would be a slick way of upgrading its present production of formaldehyde, methanol, butanol, glacial acetic acid.

Raw materials are a powerful consideration of the present commercial acrylate producers—Carbide and Rohm & Haas. Carbide, for example, is believed to make acrylates from ethylene cyanohydrin, which is made from ethylene oxide and hydrogen cyanide. The cyanohydrin can be converted into the desired acrylate by reaction with the right alcohol in the presence of a dehydrating agent (e.g., sulfuric acid).

And that's the same route Rohm & Haas took for its original acrylate production. In fact, it's probably still used by R&H to provide some of the firm's output. In new acrylate units, of course, R&H is starting with acetylene in a modified Reppe approach *(CW, Feb. 14, '53, p. 45)*. And although the company had no captive source of acetylene when it switched, it has since decided to build an acetylene-from-natural gas plant.

•

**Three experimental agricultural chemicals are creating a stir** this week—one from Diamond Alkali, two from Naugatuck:

• Diamond Alkali is sending out samples of "PRD Experimental Nematocide" developed through cooperative research by Diamond and Boyce Thompson Institute. The product is 3,4-dichlorotetrahydrothiophene-1,1-dioxide. It has been subjected to laboratory, greenhouse and small-plot tests for two years and has shown encouraging results. Sample quantities are available for further evaluation by agricultural experiment stations.

• One of Naugatuck's entries, Duraset (N-*m*-tolylphthalamic acid) is being sold as a "fruit set compound" to control blossoming. It has been registered for use on lima beans only, reportedly can increase yields up to 75% (depending on weather). Although cost per pound is high, the material is said to be economical on cost-per-acre basis.

• The other Naugatuck compound is strictly experimental. Tagged 3Y9, it's tris-(2,4-dichlorophenoxyethyl)phosphite, a pre-emergence herbicide. Although it has been under test for two years and has shown promising results, it is at least a year away from marketing, probably more.

•

**Koppers is ready to supply design and operation details** of three European plants using a German pickle liquor recovery process. Koppers obtained U.S. and Canadian rights to the process.

Developed by Zahn & Co., the process employs a technique patented by Inland Steel Co. (and assigned to Koppers).

•

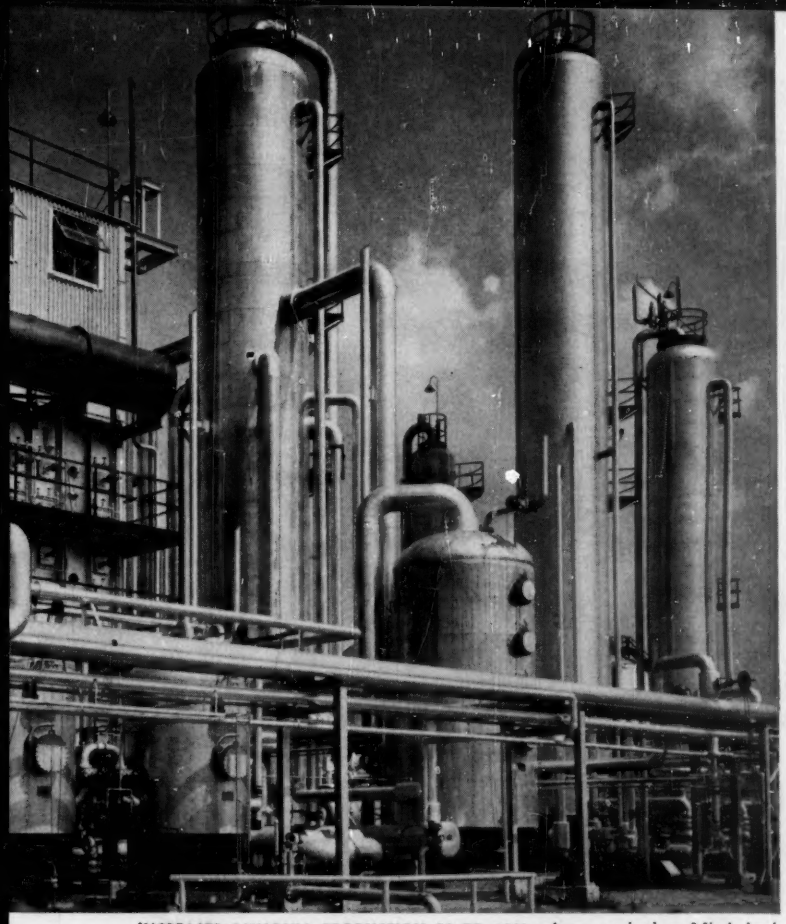
**Don't be surprised to hear** that Rocketdyne Division of North American Aviation is working on a nuclear-powered guided missile. The government has been working on such a device, and there has been a lot of research activity on nuclear propulsion of aircraft. But so far, there has been no official word on industrial development of atom-powered missiles.

•

**There's industrial interest in the biosynthesis of natural rubber** in a test tube (*CW, Technology Newsletter, Dec. 22*). Researchers of Atlantic Research (Alexandria, Va.) are reporting the results of their work this week at the meeting of the American Assn. for the Advancement of Science. Their work concerned itself with isolating and culturing species of fungi that can bring about synthesis of rubber. They feel that the fungi may prove valuable in elucidating the synthesis of steroids in the cell, as well as in the biosynthesis of new hormones. Their work was sponsored by the Office of Naval Research.

•

**Another big step toward "closing the loop" in automatic control** has been taken by Esso Standard at its Belot refinery, near Havana. It has installed a programmed general-purpose analog computer as an integral part of oil refinery process control. This is said to be the first time that has ever been done. The data logger and computer has been designed by Fischer & Porter to specifications set up by Esso Research and Engineering.



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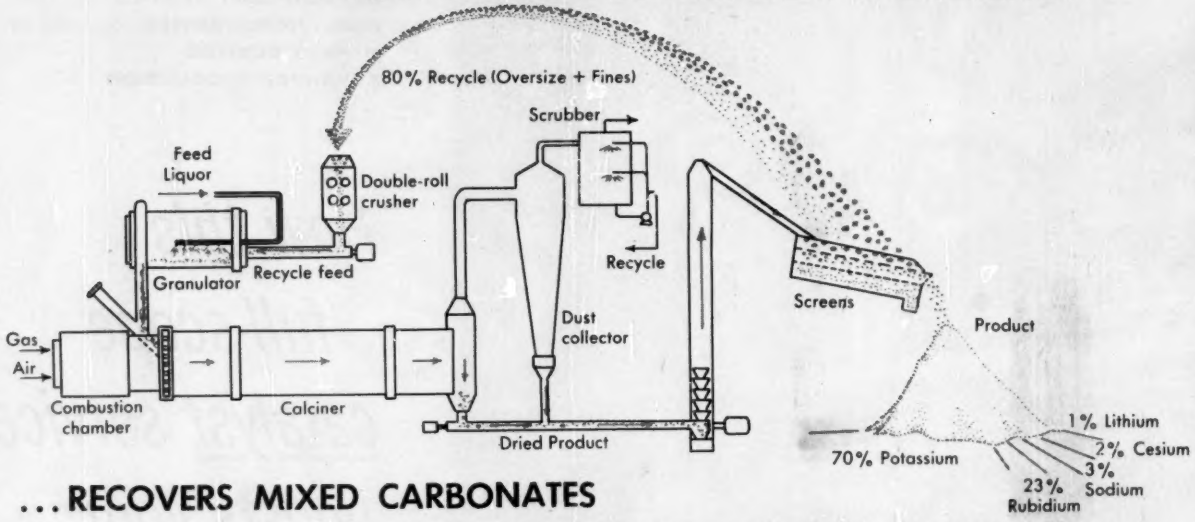
## SAN ANTONIO CHEMICALS STARTS WITH WASTE LIQUOR FROM LITHIUM PROCESSING...




## ...RECOVERS MIXED CARBONATES RICH IN SCARCE RUBIDIUM, CESIUM.

# Bidding for a Payoff in Alkali Metals

**San Antonio Chemicals, Inc.—newly formed subsidiary of American Potash & Chemical Corp.*—broke ground early this month for a $750,000 gamble on chemical process waste. The company is erecting a plant on land adjoining, and leased from, American Lithium Chemicals (San Antonio, Tex.) to upgrade waste from the latter's year-old lithium hydroxide plant (CW, Feb. 11, p. 60). Due onstream about the end of March, SAC will produce mixed alkali-metal carbonates rich in scarce rubidium and cesium.**

At first glance, the San Antonio operation appears to be a straightforward recovery process to salvage usable chemicals from lithium end-liquors. The product (initially, SAC will make a mixed salt containing 70% $K_2CO_3$, 23% $Rb_2CO_3$, 3% $Na_2CO_3$, 2% $Cs_2CO_3$, 1% $Li_2CO_3$, 1% other anions and moisture) is recoverable by conventional granulation and drying methods; it will be priced in the range of potassium carbonate, with which it will compete.

*Like American Lithium Chemicals, San Antonio Chemicals is owned jointly by Ampot (50.1%) and Bikita Minerals, Ltd. (49.9%).

But San Antonio Chemicals has a bigger goal in sight, hopes that the venture may be the first step toward commercial production of relatively low-cost rubidium and cesium. The company's immediate aim: to build up markets that can utilize the mixed salt's special qualities (Ampot claims it increases the clarity of colored glass and ceramics, picks up more carbon dioxide per pass than do other $CO_2$-adsorbing solutions, increases solubility of mixtures of salts such as phosphates). Long-range plans include development of markets and economic processes for commercial production of pure rubidium and cesium metals and their carbonates.

**High Recycle:** The recovery of mixed salts at San Antonio will begin with the removal of impurities (mainly a few parts per million of chrome, silica and gross insolubles) from ALC's lithium hydroxide end-liquors. The filtered, clarified liquor will then be sprayed onto the recycled product, to the point of complete hydration, in a stainless-steel granulator. This is the trickiest step in the process, requires a recycle of about 80% of the final product to prevent formation of a sticky, gummy mass in the granulator.

The hydrated alkali carbonates (containing about 15% water) will be delivered as free-flowing, less-than-¼-in. granules to a gas-fired, stainless-steel rotary dryer. After a 20-minute drying cycle at an exit temperature of 350-375 F, the completely dehydrated material will be moved by bucket elevator to product screening and packaging operations. Oversize product and fines make up the 80% recycle, are put through a double-roll crusher before re-entering the granulator.

**Looking Ahead:** With an eye to the future of rubidium and cesium salts and metals, Ampot is currently conducting a three-pronged research program. Object: to uncover uses for the pure carbonates and metals, practical processes of isolating the carbonates, and an efficient method of reducing the salts to the pure metals.

Developing new markets for the rare alkali metals will likely prove to be a major undertaking. Reason: ru-

they asked for a

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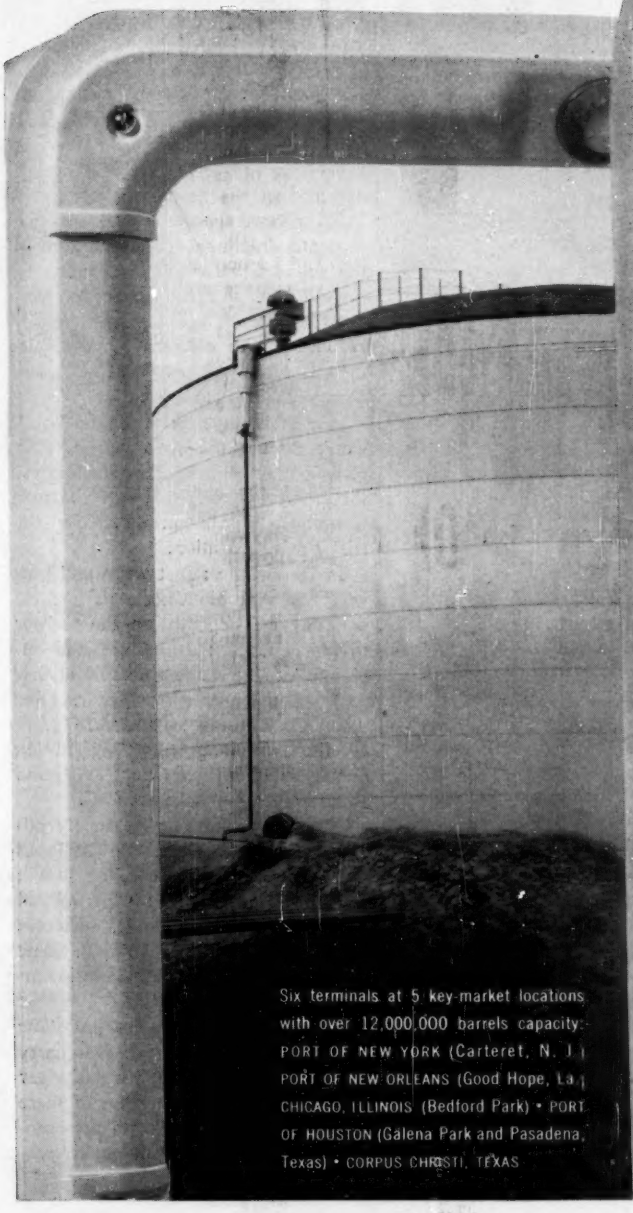

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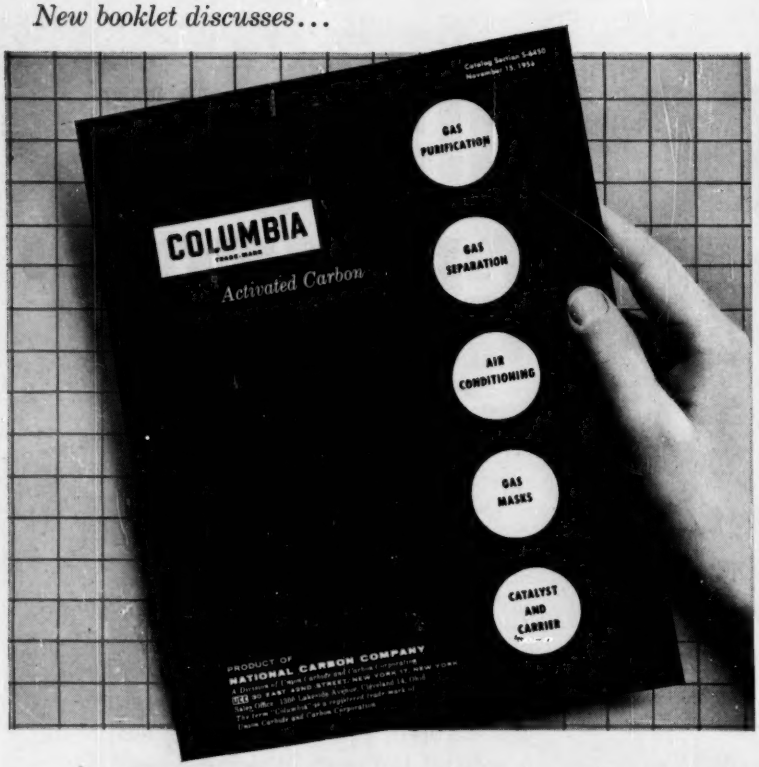


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bidium and cesium have never been available in sufficient quantity to permit intensive study of their commercial possibilities. Though few uses have been found for cesium, it does possess some properties that could qualify it for process applications: it is quite active, adds directly to ethylene and absorbs carbon monoxide in the cold to give a compound that is insoluble in benzene, ether and ammonia.

By virtue of these characteristics, cesium compounds have been suggested for use as intermediates and promoters of catalytic reactions. Rubidium, on the other hand, has exhibited few special properties that can't be duplicated by potassium or sodium at much lower cost.

To solve the problem of supplying pure compounds in quantity, Ampot is looking for new techniques of separating the carbonates. The standard method of separating mixed alkalis, now in common use, involves intricate fractional crystallization of the sulfates. Subsequent reduction of the salt to alkali metal requires conversion into the chloride, followed by reduction with calcium metal (Fairmount, Maywood, A. D. Mackay and others follow this route).

Ampot isn't ready to tip its hand, won't discuss the route its research program is following. But chances are that ion exchange is one of the new techniques being considered for the tricky salt separation.

**In the Balance:** Just when and how well San Antonio Chemicals' gamble will pay off depends on the answer to one question: If cesium and rubidium can be made available at low cost, will there be a ready market for them? Cesium now sells for 25¢/gram as the carbonate, $4.50/gram as metal; rubidium goes for 75¢/gram as carbonate, $5/gram as metal.

Glass manufacturers guardedly admit that SAC's new mixed salt looks interesting. But, they caution, it will require considerable experimental study to work out new batch formulas before the material can be used. Some glass producers are now experimenting with the mixed salts.

It's too early to predict just how far Ampot's new venture will carry rubidium and cesium. But it's clear that the commercial fortunes of these metals will rise or fall with the company's three-point development program.

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# Reviews Cite Sales Hikes

For at least three segments of the chemical process industries, the year just ending has produced some fairly heartening statistics; here are rundowns on pesticides, plastics, rubber.

This is the season when most marketing men try to evaluate the immediate future by noting the developments of the recent past. Pesticides, plastics and rubber are three areas currently coming in for such review.

Pesticide chemical sales in the past 12 months, for example, reached an estimated $250 million (at the basic producers' level), set an all-time high for the industry. This total topped '55's $200 million by 25%, according to the year-end statement of the National Agricultural Chemicals Assn.

Sales during the year, says the industry's pulse-taking group, were boosted by a variety of developments including a series of heavy insect infestations (particularly in the South and Southwest) and a greater use of pesticide chemicals in public health programs throughout the world.

But over-all exports of pesticide chemicals, which had showed a major gain in '55, slowed somewhat during '56. For the first six months, exports were 158,608,000 lbs., valued at nearly $44.5 million—a 5% drop in quantity, but a 6% increase in value over the previous year. Exports to the Caribbean, South Africa, Asia, Oceania and Africa stepped up during the year.

How did production fare in '56? Except for 2,4-D, reports the association, output of basic pesticide chemicals this year was well ahead of '55's. In the first 11 months of the crop year, benzene hexachloride (gamma basis) was up 66%; DDT increased 25%; 2,4,5-T was up an impressive 74%; and copper sulfate was turned out at a 4% better rate. One likely reason for 2,4-D's drop: large carryover stocks from the '55 season.

**Plastics Progress:** Over-all U.S. production of synthetic plastics and resin materials in '56 registered at least a 10% gain over last year's more than 3.5 billion lbs. The near-4-billion-lbs. output, reports the Society of the Plastics Industry, sets an all-time high for the comparatively new segment of the chemical process industries.

Total sales of plastics in the past 12 months have also been the best in the industry's history. Bakelite's President George Miller, in his year-end review, notes that a "spectacular increase of about 45% in pound sales of polyethylene resins over last year helped push total consumption of plastics to a record high in '56, despite the fact that some key industries report business declines for the year."

Some pertinent points in his review:

- Polyethylene's sales increase from 346 million to 500 million lbs. was the outstanding feature of the year.
- Vinyls remained the largest of the plastic groups. Sales of all types of vinyls in '56 totaled about 700 million lbs.—6% greater than '55's.
- The styrene category, second largest of the plastic family groups, with sales of an estimated 590 million lbs. during the year, showed very little change from the '55 total.

Consumption of cellulosics was boosted to a new high in '56, chiefly because of a variety of new applications including women's shoe heels and a stepped-up use in the packaging field. On the other hand, the alkyd and coumarone-indene groups were down slightly from '55. Polyurethane output probably won't reach 10 million lbs. in '56, but the great number of companies beginning to produce the isocyanate materials, opines Miller, would indicate considerable activity in the next few years.

**Rubber Rebound:** It's conceded by most rubber trade analysts that total industry sales during '56 were not as high as had been earlier anticipated. U.S. Rubber's President H. E. Humphreys, Jr., estimates that this year's level just about matches the $5.5 billion racked up in '55. Poundwise, however, rubber consumption in '56 (a shade under 1.44 million long tons) is about 6% less than last year's record-breaking usage of 1.53 million tons. (Consumption in '57 will be some 1.5 million tons, with a value of about $6 billion.)

"Further," says Humphreys, "the general price level for rubber products increased slightly in '56 because of higher raw material and labor costs." These more expensive manufacturing charges, which will be reflected throughout '57, believes Humphreys, will contribute to the expected increase in dollar sales.

That '56 will be the second-biggest year for the industry, in terms of rubber consumption, is bolstered by the Rubber Manufacturers Assn.'s year-end report, which cites identical figures. In addition, RMA President Ross Ormsby notes that although tire sales declined about 9% in '56, the industry's total volume of business equaled the record reached in '55.

Ormsby credits the vigorous growth of the nontire segment of the rubber manufacturing industry as the chief sales prop in recent years. Makers of more than 35,000 nontire rubber products consume only 38% of the new rubber used by the industry, but such items account for upwards of 51% of the total dollar volume.

Here's a breakdown of where that 38% of nontire new rubber was consumed: manufacturers of mechanical and industrial rubber goods used about 10%; latex foam production, about 6%; the other 22% went into shoe products, athletic goods, toys, stationers' products, sponge rubber items, insulated wire and cable, flooring, cements, and other products.

Another healthy jump was recorded in the industry's synthetic rubber export category: estimates indicate that '56 exports will exceed 150,000 long tons, compared with '55's 93,365 tons and the 30,486 long tons shipped out in '54.

Is the rubber industry growing? Highlight of the various summaries and reports circulating in the trade is the studied estimate by Harvey Firestone, Jr., chairman of The Firestone Tire & Rubber Co., that during the calendar year '56 some $180 million will be spent for expansion by the rubber industry in the U.S. alone. This amount, says Firestone, was well ahead of the $150 million spent in '55, and the $131-million expansion tab in '54.

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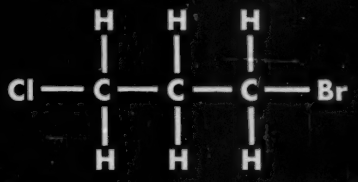


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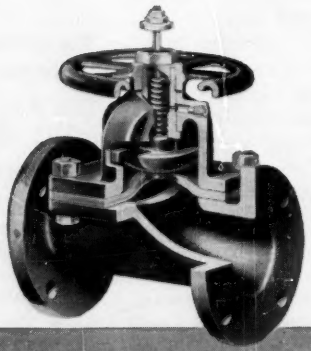
For the finest valving in plastic piping systems—specify the valve with experience "built-in"—The Hills-McCanna Diaphragm Valve made of PVC.

**ONLY Hills-McCanna *Plastic* Valves offer all these features—**

- Complete chemical resistance of unmodified PVC.
- Rugged body construction with heavy wall sections and embedded reinforcing members.
- Positive valve closure with exclusive sealing bead diaphragm.
- Simple, cost-saving in-line maintenance.
- 25 years of diaphragm valve manufacturing and application experience.
- More than 10 years of research and manufacturing experience on plastic valves alone.

PVC is just one of several plastic body materials offered by Hills-McCanna. Also available are bodies of polyethylene, Saran and Uscolite. Diaphragm materials include rubber, neoprene, Hycar, Tygon, Compar, polyethylene, Kel-F and Teflon. Size range from ½″ through 2″. Sold and serviced by Hills-McCanna representatives coast to coast and by leading distributors of plastic pipe. For further information request Catalog No. 100.



**HILLS-McCANNA CO.**

**2445 W. Nelson St., Chicago 18, Ill.**

**HILLS-McCANNA**

*Corrosion Specialists Since 1870*

MANUFACTURERS OF: DIAPHRAGM VALVES • CHEMICAL METERING AND PROPORTIONING PUMPS • FORCE FEED LUBRICATORS • LIGHT ALLOY CASTINGS

# Market Newsletter

CHEMICAL WEEK
December 29, 1956

**There was quick confirmation of the report** *(CW Market Newsletter, Dec. 15)* that nickel chemical prices would be swept higher by the unprecedented 9½¢/lb. boost in nickel metal prices. Early last week, nickel sulfate and anodes (used widely in the plating industry) were advanced.

The increases will abruptly lift nickel anode prices 12¾¢/lb. (to $1.04½ on rolled oval carbonized), and the sulfate 2¼¢/lb. New prices on the latter, which apply to January deliveries: 32½¢/lb. for c.l. lots; 33½¢-40½¢/lb. for l.c.l. quantities.

**The continuing nickel shortage is again a hot topic** in Washington. Latest discussion-opener is a just-released report on the Senate Small Business Committee hearings held last spring (*CW, May 19, p. 154*).

Targets for criticism: the Office of Defense Mobilization and Commerce Dept. The report accuses the agencies on two counts: (1) giving "inadequate" help to small electroplaters in their attempts to get a fair share of nondefense nickel; (2) failure to maintain accurate statistics on available supplies.

The committee also took a swipe at the government for allegedly mishandling allocations in 1950-53, and for current defense-rated orders. The report, signed unanimously by Democratic and Republican members, went so far as to recommend re-establishment of allocation controls.

This, though, is a remote possibility.

•

**How did sulfur do in '56?** Production and consumption in the U.S. reached new highs, while exports held near the record levels of the past few years. That's the gist of the year-end summary by Freeport Sulphur's president, Langbourne Williams. Some details:

- Output from all sources increased to an estimated 7,875,000 long tons, or 825,000 tons more than in '55.
- Consumption in the U.S. came to about 5,900,000 long tons, some 250,000 tons more than in the previous year.
- Exports are expected to match '55's 1,600,000 tons.

Despite the greater general demand for sulfur, said Williams, little change occurred in the use pattern by industries. Top use is still in sulfuric acid production, which consumed 80% of the sulfur used. The remainder went into chemical compounds or was used in elemental form.

•

**Although ammonium sulfate sellers have been making** some heavy shipments out of the country, stocks continue to increase. Chief reason: domestic demand from fertilizer makers is creeping along at a seasonally slow rate.

Underlining the oversupply market condition are the latest government statistics (Bureau of Mines), which indicate that sulfate stocks at the end of October hit 202,000 tons—said to be the largest stock for any October on record; Oct. '55 quantities amounted to about 10,000 tons less than that.

•

**What's the current U.S. polyethylene situation?** According to George Miller, president of Bakelite (*see p. 82*), markets will continue to grow, but shortages of polyethylene won't be a problem for some time to come. Additional high-pressure process capacity totaling some 300 million lbs. will be completed within 12-18 months, jacking total industry capacity to 850-900 million lbs./year.

New plants for low-pressure process polyethylene capable of turning out about 430 million lbs./year have been announced, and all that capacity is slated to be in operation by 1960. Add the figures together and you get a polyethylene capacity that will total, within three years, some 1.3 billion lbs./year.

•

**A lag in sales is reportedly behind the ½¢/lb. drop** in refined copper prices that was posted late last week by domestic custom smelters. The cut continues the copper price downtrend, which—except for a 1¢/lb. hike in November—has been going on since early fall. The November advance, attributed to the Middle East situation, established the 36¢ level that is now being cut to 35½¢.

Major copper producers haven't yet cut prices, but the trade expects them to follow the custom smelters' lead.

**The trend may be going the other way in synthetic fabrics.** Hikes are likely—and soon. Du Pont has listed price increases averaging about 5% on its nylon, Dacron, and acetate filament yarns. (Prices of staple and tow forms were raised last month by Du Pont; rayon filament prices, too, have been upped by major producers.)

**SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending December 24, 1956**

| | Change | New Price |
|---|---|---|
| **UP** | | |
| Nickel sulfate, bgs., c.l., dlvd., lb. | $0.0225 | $0.325 |
| Nickel anodes, rolled oval carbonized, 500-5,000-lb. lots, lb. | 0.1275 | 1.045 |
| Manganese dioxide, African, 83%, bgs., 40,000-99,999-lb. lots, f.o.b. shipping point, ton | 39.50 | 148.00 |
| **DOWN** | | |
| Reserpine, cryst., bots. gram | 0.75 | 3.00 |

**All prices per pound unless quantity is stated.**

# Report

## • Filtration the Answer to High Costs of Industrial and Process Water

### Part 1

The continued expansion of our free economy is forcing management and design engineers to face the problem of *water*. Water is as essential to industrial development as it is to human life.

**Municipal Supplies Limited**

More and more we read stories in the daily papers of various cities which have had to apply restrictions on water consumption. While sprinkling bans may ruin your lawn this year, it is an omen of a possible water shortage in the future.

**Natural Resources Restricted**

The use of natural water resources . . . lakes and rivers . . . is being restricted by pollution. For example, the entire water of one of the major eastern rivers is reused seven times while moving one mile down stream. To make use of this water for industrial purposes involves an extensive treatment system . . . resulting in a high initial capital expenditure.

**Water the Life Blood of Industry**

This is not a patent cliche! It is a basic fact. Years ago water's primary importance to industry was as a means of transportation. Today water is essential to industrial survival. As with any commodity, as the supply decreases with respect to demand, the price per unit increases.

The cost of industrial and process water has risen rapidly during the past 10 years . . . will rise even further and more rapidly during the coming 10 years.

**Methods of Solving Problem**

More and more firms consider the problem of water shortage when planning the location of new plants. Plant sites are chosen near natural water resources. When the source is a river or lake, their planning often includes waste water disposal . . . a factor that did not exist some years ago.

River and lake water, particularly during rainy season run-offs, require water treatment of some sort. The higher the quality of the water needed by the plant, the more expensive the water treatment . . . but in the long run it pays for itself.

Filtration of the raw water with an Adams AWF Automatic Filter may eliminate the need for a pre-treatment settling basin. If water softening equipment is used, the AWF may also help reduce the cost of this equipment by the removal of solids from the water to be softened.

**Filtration After Treatment**

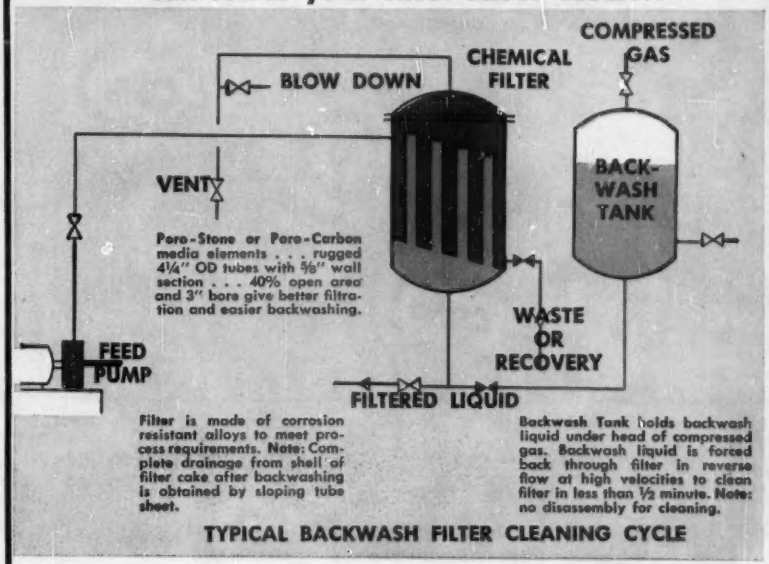
Where the polish of the industrial or process water is a critical factor, it very often pays to install a filter after the softening equipment. In this application the filter acts to remove the precipitated salts. These salts cause trouble by collecting in low spots, or reacting chemically when introduced into process solution. This phase of keeping your industrial water costs down will be covered in the next *Adams Report*. Watch for it.

**New Bulletin Available**

Bulletin 909, on the Adams AWF Automatic Filter is available upon request from the R. P. Adams Company, Inc., 562 East Park Drive, Buffalo 17, New York.


**ADAMS BACKWASH DESIGN**

**can lower your filter labor costs...**


COMPRESSED GAS
CHEMICAL FILTER
BLOW DOWN
VENT
BACK-WASH TANK
Pore-Stone or Pore-Carbon media elements . . . rugged 4¼" OD tubes with ⅝" wall section . . . 40% open area and 3" bore give better filtration and easier backwashing.
WASTE OR RECOVERY
FEED PUMP
FILTERED LIQUID
Filter is made of corrosion resistant alloys to meet process requirements. Note: Complete drainage from shell of filter cake after backwashing is obtained by sloping tube sheet.
Backwash Tank holds backwash liquid under head of compressed gas. Backwash liquid is forced back through filter in reverse flow at high velocities to clean filter in less than ½ minute. Note: no disassembly for cleaning.

**TYPICAL BACKWASH FILTER CLEANING CYCLE**

There are numerous filters which will meet the needs of your particular process. Your problem has become . . . "Which one shall I buy?"

Doubtlessly, there are other units which will produce as clear an effluent as the Adams filters. So the choice would seem to narrow down to initial investment. Here you will find Adams filters competitive in price.

What about operating and maintenance costs? That's where the Adams filter can save you money!

You clean your Adams filter by operating a few valves . . . no time consuming and often dangerous manual disassembly and cleaning necessary. Your filter is off-stream for as little as two minutes and seldom over 15. The liquid required for cleaning is only a small fraction of that needed by other filters using the reverse flow technique. And what's more, you get thorough cleaning. The Backwash liquid is easily recovered if necessary.

**R. P. ADAMS CO., INC.**
262 E. PARK DRIVE
BUFFALO 17, N. Y.

D-56

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262 East Park Drive
Buffalo 17, N. Y.

Gentlemen:

We have a problem in chemical filtration. Please send us your Bulletin 431.

Name.....Title.....

Firm.....

City.....State.....

# FROM PAINTER TO PUTTER . . .

## Which of these materials do you need? *Call RCI!*

1. **RCI alkyd and amine resins** — can be combined to produce surface coatings for a wide variety of kitchen applications ranging from furniture finishes to durable refrigerator enamels. There's also a big market for the amines in the paper industry which uses them to add wet strength to paper towels, which have become almost a kitchen necessity.

2. **RCI polyester resins** — reinforced with fibrous glass form attractive translucent sliding doors for kitchen cabinets. Other RCI polyesters can be used to formulate polyurethane foams for cushioning dinette chairs.

3. **RCI phenol-formaldehyde resins**— are utilized in fast-curing molding compounds for heat-resistant utensil and appliance handles . . . filler sheets for laminated kitchen counter tops. (Both phenolic and reinforced polyester resins are now being used experimentally in golf club shafts of several different designs.)

4. **RCI phthalic anhydride** — constitutes a base for plasticizers used in the manufacture of vinyl floor tile.

5. **RCI pure and modified phenolic resins** — make floor waxes and polishes harder and longer-lived.

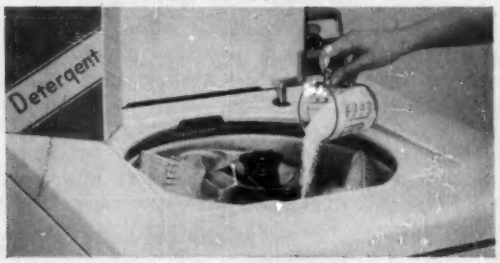
6. **RCI pentachlorophenol**— is an important ingredient in preservative solutions which help make wood exposed to weather last up to 4 times as long as untreated wood.

The next time you have a supply problem (or a technical problem), take a look at RCI. See where fast delivery of quality-controlled RCI materials (including the basic chemicals listed with our signature) can help you.

# . . . RCI is in the Picture!

**AT RCI**—tank car is loaded with a new non-drying alkyd resin developed by Reichhold for use with amine resins in superior baking enamels for home laundry equipment. The big advantage is that . . .

**DETERGENTS WON'T DULL** glossy enamels for automatic washers made with this RCI alkyd . . . an advantage every housewife (and manufacturer of industrial finishes) can appreciate.

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## WHAT TO EXPECT FROM CANADA'S NEW 'ECONOMIC NATIONALISM'

- Canadians will put more equity capital into their industries.
- Canadian subsidiaries of U.S. firms will get more operating autonomy.
- Stocks of U.S. parent companies will be listed on Canadian stock exchanges.
- More Canadians will be given top posts in subsidiary companies.

# Less U.S. Say-So In Canada

**U.S. chemical companies are reappraising relationships with their Canadian subsidiaries, trying to decide how best to live with the tide of "economic nationalism" currently engulfing the Dominion. Canadian national opinion these days strongly favors less domination of the country's industry by foreigners.**

One significant change has already taken place, and others are expected (*above*). The first important development: preparation of an amendment to the U.S.-Canadian Tax Convention reducing from 95% to 51% the percentage of share ownership a U.S. parent company must have to entitle it to a lower tax rate on dividends remitted by its Canadian subsidiary. Informed sources feel that an immediate result of the amendment—assuming that it is ratified by both countries—will be a substantial increase in Canadian financial participation in the subsidiaries.

**Reasons for Concern:** As a result of a recent Dominion Bureau of Statistics study, Canadian industrialists, officials and labor leaders know for sure what they had long suspected: many essential areas of Canadian industry are foreign-dominated.

In 1953, 47% of all Canadian manufacturing industries—worth some $9 billion—were foreign-controlled. Too, 58% of the chemical industry fell into the foreign-controlled category. Such investments—in subsidiaries and branches subject to parent company control—had jumped almost 250% since 1945. These investments now make up 60% of total U.S. investments in Canada, and the U.S. share of all foreign investments in that country is 80%. And foreign control of Dominion industries apparently won't swiftly decrease. DBS statistics reveal that 23% of all new industrial investments from 1947 to '54 came from sources in the United States.

**Labor's Reactions:** A significant force behind the drive to end foreign domination of industry is the powerful one-million-member Canadian Labor Congress. Claude Jodoin, CLC president, argues that U.S. policies do not always operate for the benefit of the Canadian worker or the public.

"Often," Jodoin told federal probers, "the personal interests of the parent company dictate the policy of the subsidiary, even if such decisions are not in the best interest of Canada."

**Management's Wrath:** Organized labor is not alone in stimulating and perpetuating Canada's "economic nationalism." The Canadian Manufacturers' Assn. — whose members account for about 75% of that country's total manufacturing output —says many U.S. subsidiaries exist simply as branch assembly plants operating under policies that bear little relationship to the social needs of the communities in which they are located. These branches, CMA says, contribute little in the way of capital investment, import all their needs, and may be closed down at a moment's notice.

CMA, along with other significant groups supporting Canada's "economic nationalism," does not want to bring about changes via legislation. On that score, U.S. firms can rest easy. Informed sources in Ottawa say some big U.S. parent companies are already studying ways to offer more operating autonomy to their Canadian subsidiaries, along with other changes designed to overcome criticism of their north-of-the-border operations.

## LEGAL

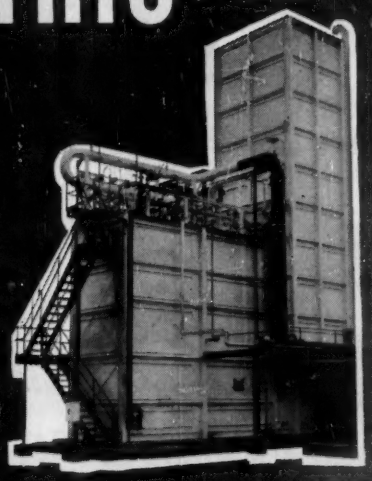
**Food Colors Barred:** Canada has banned imports of foods containing Orange I, Orange SS and Oil Red XO—the ones formerly known in the U.S. as FD&C Oranges 1 and 2, Red 32—and to prevent confusion, Canada's Health & Welfare Dept.'s Food & Drug Division has established an elaborate set of ground rules affecting imports.

All provisions covering imports of foods containing the banned colors hinge on the fact that after Aug. 1, '57, foods containing these colors will be subject to seizure and other action in accordance with provisions of Canada's Food & Drug Act. To take care of foods already imported, Canadian officials say they will take no action for a stated period against the sale of existing stocks of foods containing the colors, if the food was manufactured before Aug. 1, '56. Fish and fruit in this category will be exempt for two months, other foods for 12 months.

To simplify enforcement of the new rule, the agency will consider that food shipments arriving at ports of entry before Feb. 1, '57, were prepared before the deadline.

Meanwhile, U.S. government officials and food industry spokesmen are undecided on what measures each will propose in 1957 to resolve the conflict over chemical food additives in this country. The industry—which deadlocked with the U.S. Food & Drug Administration last year over technicalities of a proposed bill—says its legislative suggestions will be pushed in '57, whether or not FDA agrees.

# When THIS



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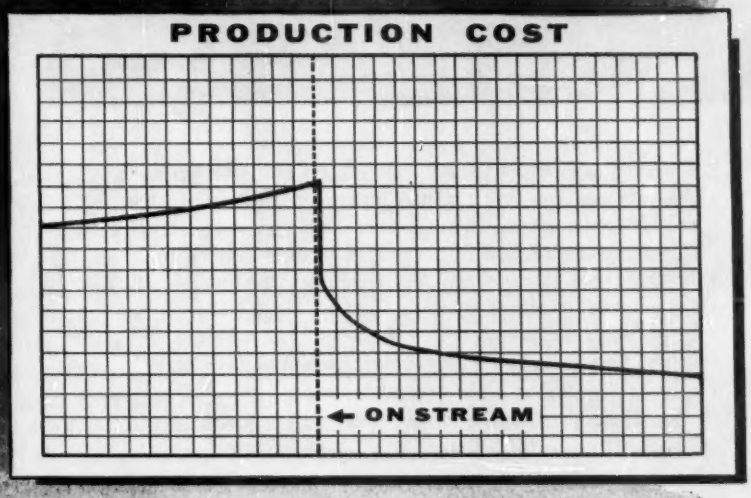
# THIS goes down




Do you use oxygen and/or nitrogen on a large scale? Or are you contemplating expansion involving the use of oxygen? If so, we can easily prove that an Air Products "On-Location" Oxygen and/or Nitrogen station will reduce your costs —substantially.

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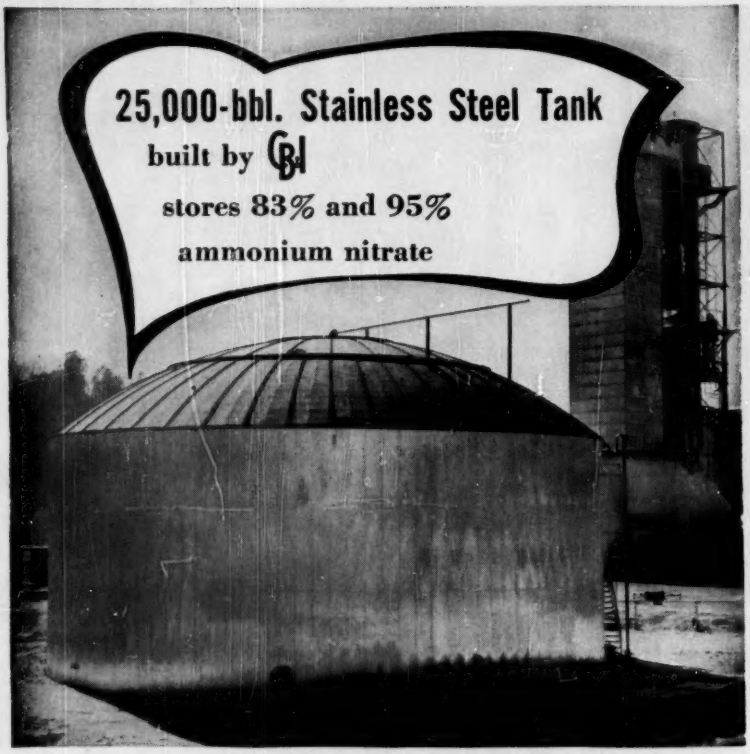


When the ammonium nitrate prilling plant in the background, above, is shut down for maintenance, the production of 83% and 95% ammonium nitrate solutions from nitric acid continues. This is possible because of the storage facilities offered by the 25,000-bbl. Horton® stainless steel tank in the foreground. The ammonium nitrate stored in the tank is used when the prilling plant is returned to operation. The tank can also be used for storing 5,000 tons equivalent ammonium nitrate to be prilled during high demand season.

The Horton stainless steel tank, built for the Mississippi Chemical Corporation, Yazoo, Miss., is expected to pay for itself quickly by helping to increase considerably the company's production.

CB&I is a steel plate structure specialist. When planning structures, of unique or standard design, write our nearest office for information, estimates or quotations.

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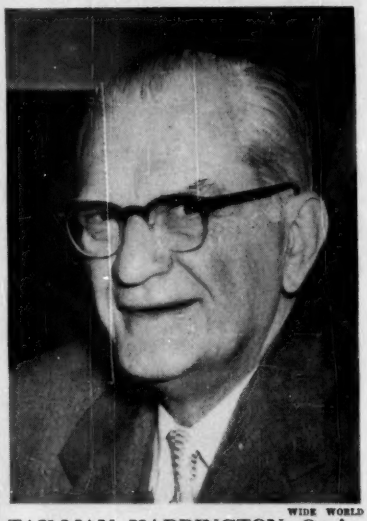
## ADMINISTRATION



WIDE WORLD

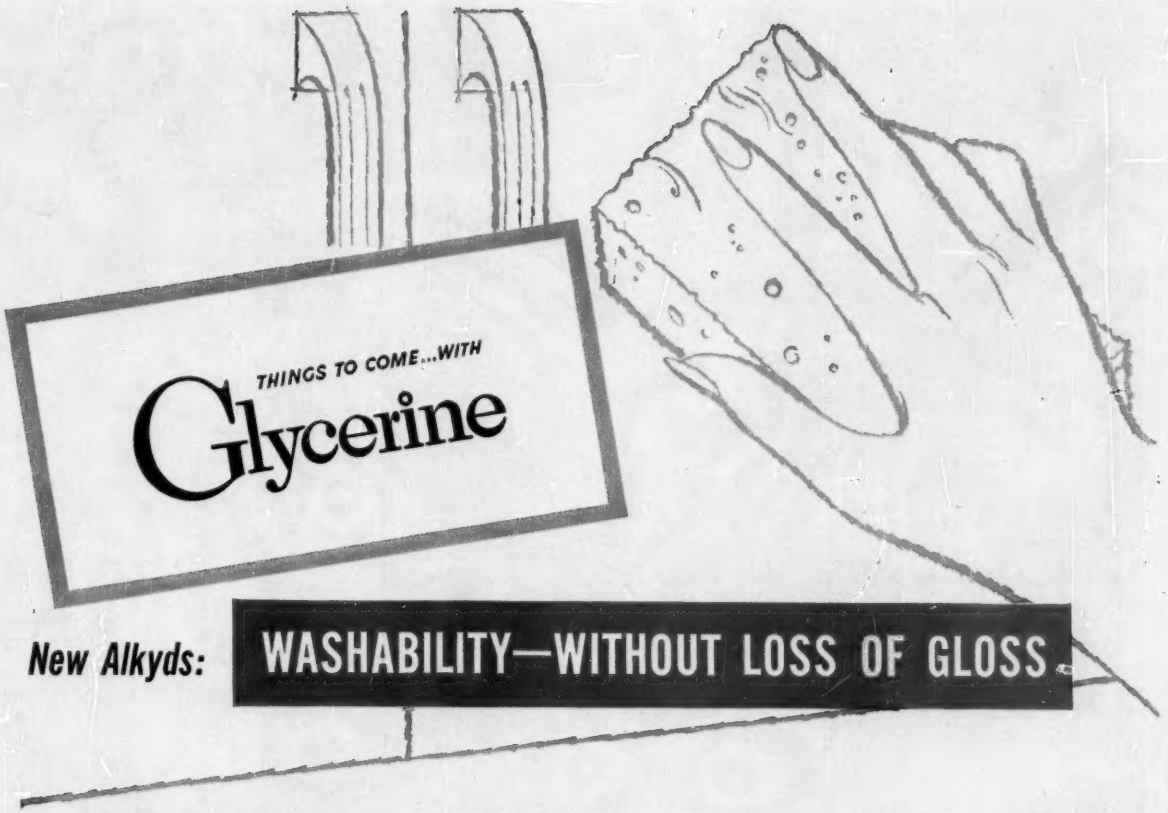
**TAX-MAN HARRINGTON: On income set asides, no deductibility.**

## LABOR

**Set-Asides to Be Taxed:** If you have a supplemental unemployment benefits plan for employees, you may deduct from taxable income all money actually paid into the SUB fund, but not money that's set aside for possible future payment into SUB. That's the latest ruling from the U.S. Internal Revenue Service on handling of layoff-pay programs. IRS Commissioner Russell Harrington says the question of deductibility came up in connection with a contingency liability fund set up by one employer. Such a fund would have covered additional SUB payments he might have been obligated to make if the regular SUB fund were to drop below a certain level.

•

**New Wage Drives:** Just as numerous unions are setting 1957 wage goals on the basis of pacts signed in the coal and steel industries several months ago, two other unions that covet the role of pace-setter held by coal and steel have announced wage drives that may prompt many locals to jack up their 1957 demands. The oil wage policy committee of Oil, Chemical & Atomic Workers (AFL-CIO) directed the union's oil-worker locals to start bargaining for a 27¢/hour rise in basic pay rates and "substantial improvements" in fringe benefits. This directive is bound to be noted by all OCAW chemical locals, which have already become




## New Alkyds: WASHABILITY—WITHOUT LOSS OF GLOSS

New oil-modified alkyds—made with epoxy phenolic ethers and *Glycerine*—offer unusual resistance to solutions of soaps, alkalies and synthetic detergents. What's more, these new resins are said not to lose their gloss after exposure to the atmosphere.

The new alkyds, described in a recent patent*, are made by heat treating components of conventional oil alkyds with a glycidyl mono-hydric phenolic ether or other ethers containing an alkyl epoxide group. A typical formulation contains Glycerine, soybean oil, glycidyl ether of p-octyl phenol, and phthalic anhydride.

Surface coatings made with the new alkyds retain all the properties for which Glycerine-based alkyds are so well known—flexibility, toughness, adhesion and durability—plus added chemical resistance and gloss retention. In tests, the new resins were unaffected by a wide range of chemical agents which damaged other alkyd coatings.

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*U. S. 2,731,429

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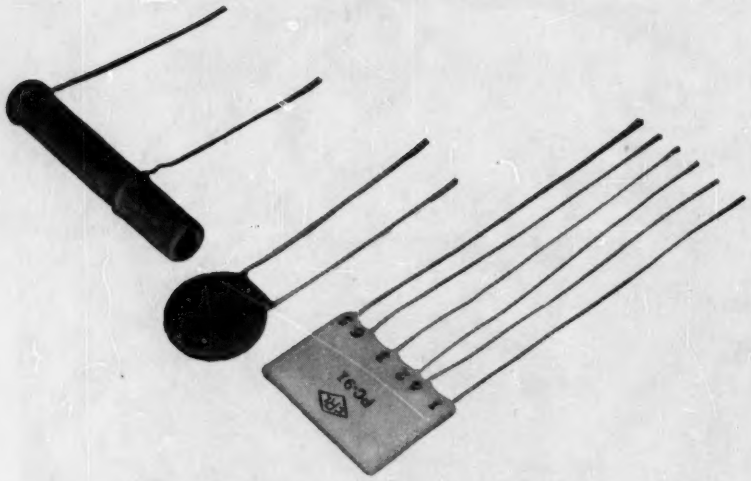

*You could profitably consider*

**THE COATING THAT PROTECTS**

Phenolic resins have characteristics that may overcome some problem you are facing, one in particular being their capacity to protect other materials from the effects of ambient conditions.

In electronics, a typical example, components such as resistors, small cores, capacitors, and condensers must have protection of this sort to prevent shorting and change in electrical characteristics. The resin is ideal for the purpose. Used in a dip compound, it forms a tough coating that keeps out dust and moisture, and withstands handling and the heat of soldering.

In your business too, Durez resins may be a means to a longer product life, an effective sales feature, or a less costly process. As long-time specialists in phenolics, we'll gladly cooperate.

**DUREZ RESINS OFFER YOU . . .**

| | |
|---|---|
| ***Electrical Resistance*** | Dielectric strength up to 600 volts per mil and power factor of 2.2%. |
| ***Chemical Resistance*** | Insoluble in acids, mild alkalies, and all organic solvents. |
| ***Heat Resistance*** | Up to 450°F. continuous and 700°F. intermittent with no carbonization. |
| ***Mechanical Strength*** | Transverse (flex.) 11,000 lbs. p.s.i. Impact (Izod) .22 to .25 ft.-lb./in. Tensile 5-6,000 lbs. p.s.i. |
| ***Water Resistance*** | Impervious to hot and cold water . . . forming completely water-resistant glue lines. |

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*Export Agent:* Omni Products Corp., 460 Fourth Avenue, New York 16, New York

## ADMINISTRATION

restive about the higher wages enjoyed by fellow OCAW members who belong to oil locals.

Too, the United Auto Workers (AFL-CIO)—which blazed the trail on SUB plans last year—throughout 1957 will be preparing to seek an all-time record pay increase in '58. Contracts will be up for renegotiation that year in all three of UAW's principal industries—autos, aircraft and farm machinery.

In chemical processing, one newly negotiated contract that may typify current bargaining in this industry is the three-year pact between American Synthetic Rubber Corp. (Louisville, Ky.) and five AFL-CIO unions representing about 150 employees. The contract calls for a 6% wage increase now, 4% next fall and another 4% in '58.

## KEY CHANGES

**Eugene C. Swift,** to vice-president in charge of finance, Sharples Corp. (Philadelphia).

**William J. Snoddon,** to director of research, Yale Rubber Mfg. Co. (Sandusky, Mich.).

**H. F. Robertson,** to manager, technical planning; and **A. W. Downes,** to general manager, new resins and compounds; Bakelite Co. Division, Union Carbide and Carbon (New York).

**H. W. Strong, Jr.,** to vice-president in charge of operations, Air Reduction Co.'s Colton Chemical Co. Division (Cleveland).

**Thornton F. Holder,** to director of research, Diamond Alkali (Cleveland).

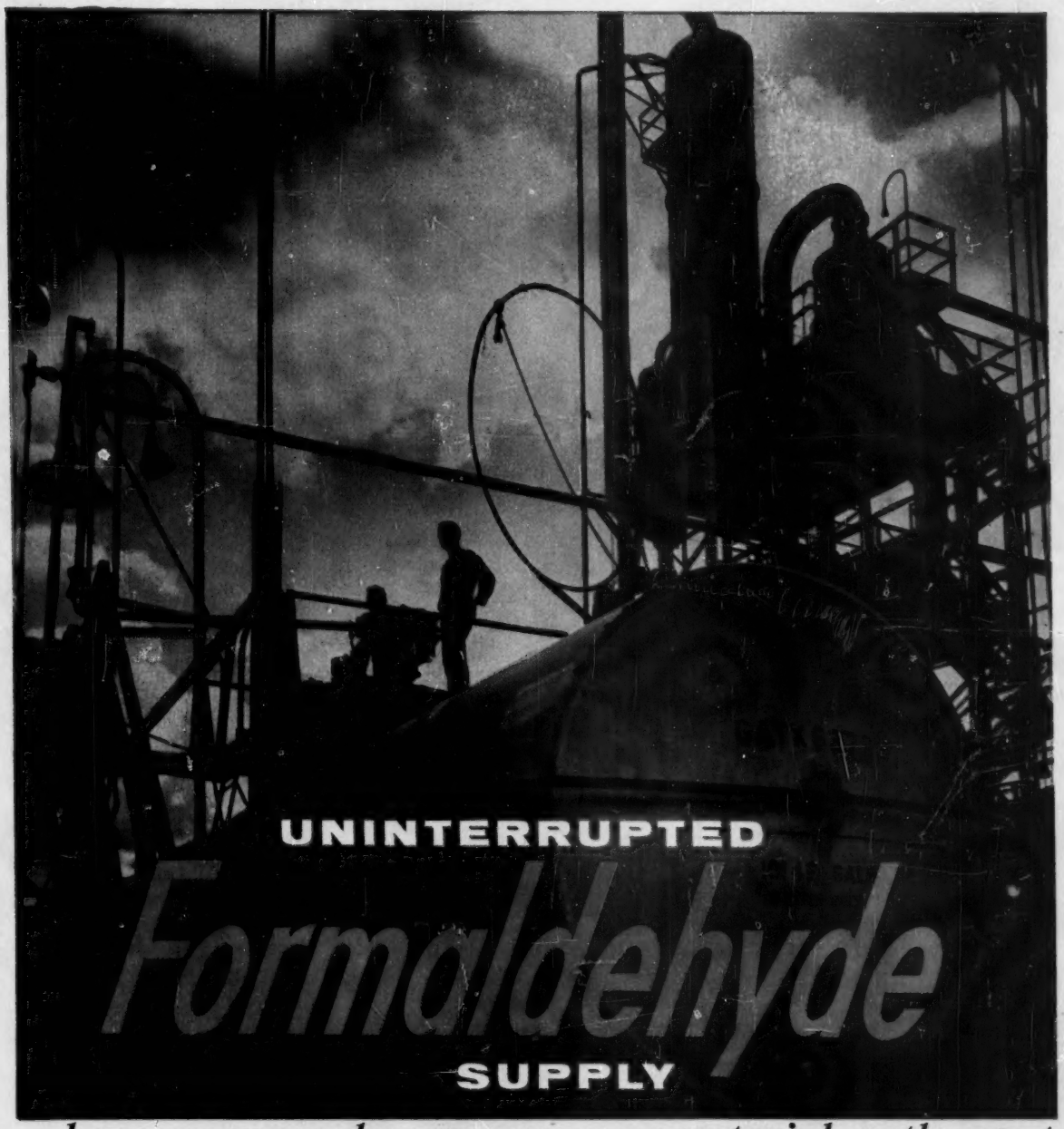
**Hugh C. Land,** to general manager, Industrial Division, Pennsylvania Salt Mfg. Co. (Philadelphia).

**Gerald W. Harris,** to vice-president in charge of Industrial Products Dept., J. M. Huber Corp. (New York).

**Earl Huston, Jr.,** to general sales manager, Baltimore Paint & Color Works, Inc. (Baltimore, Md.).

**Joseph B. Skaptason,** to manager, agricultural product development, Spencer Chemical (Kansas City).

**G. M. Halsey** and **W. D. Stallcup,** to directors; and **Willard C. Lighter,** to executive vice-president; Glidden Co. (Cleveland).




## ...because we make our own raw material on the spot

When you buy formaldehyde from Allied Chemical, you can be sure of steady supply — and purity. Because Allied produces the basic raw material, methanol, right at the same plant where the formaldehyde is made.

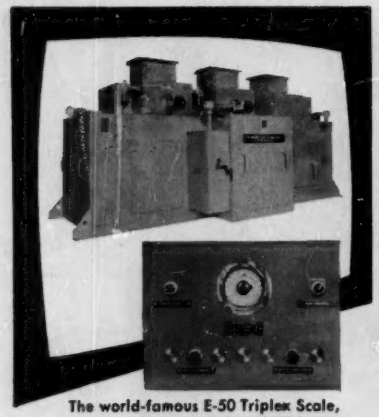
You get prompt delivery in tank trucks and 8,000 and 10,000-gallon tank cars — because of Allied's central location at South Point, Ohio, and its customer-convenient bulk terminal locations. Phone or write for specific details about delivery, prices and technical service.

Dept. F 1-7-3

Allied Chemical — Nitrogen Division

40 Rector Street, New York 6, N. Y.

Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate—85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Sodium Nitrate • Methanol • Nitrogen Tetroxide • Nitrogen Solutions • Fertilizers & Feed Supplements



The world-famous E-50 Triplex Scale, just one of several multi-unit Richardson installations available — coupled with a Richardson Remote Stop Counter Panel — gives you low-cost automatic proportioning.

**MINIMUM CAPITAL INVESTMENT FOR**

# Automatic Proportioning

**The simplest, most dependable, accurate and inexpensive system you can own!**

Do you think in terms of an astronomical investment when you think of an automated proportioning system? It ain't — as the song goes — necessarily so!

A simplified RICHARDSON system in many cases can do the job of a much more expensive and complex fully-automated system. It's made up of Richardson Scale batch weighing units (one for each ingredient) — interlocked for simultaneous delivery — plus a Richardson Remote Stop Counter Panel. Because of its speed, it gives virtually continuous-stream delivery — with the kind of accuracy you can get only from a batch weighing scale!

If cutting costs and upping production on a minimum investment sounds interesting to you, write (at no obligation) for full information about a Richardson System to fit the special and exact needs of your plant. 3077

***Do it today!***

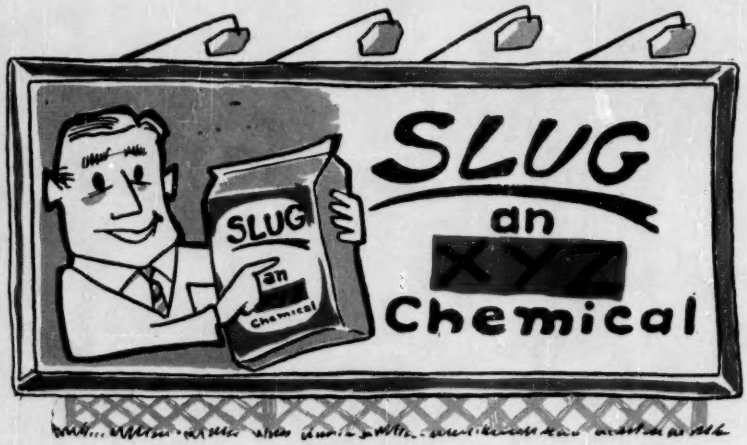
Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

**RICHARDSON SCALE COMPANY, Clifton, N. J.**

Atlanta • Boston • Buffalo • Chicago • Cincinnati Detroit • Houston • Memphis • Minneapolis • New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal • Toronto • Havana Mexico City • San Juan • Geneva, Switzerland Nottingham, England



**Promotion of chemicals by brandname is picking up. But for distributors who carry competing lines there are problems as well as benefits in the scheme.**

# Brandname: Boom or Bane?

**Jaw-breaking** generic names and formulation descriptions don't lend themselves to easy-reading promotion. Yet the advantages of creating brand preference are only too well known. To lick this perennial frustration, producers in two broad segments of the industry are trying a neat gambit: applying trademarked product names to new chemicals. Long established in agricultural chemicals, the trend is catching on fast in the organic and specialty fields.

Chemical distributors, *CW* finds, view the development with decidedly mixed emotions. Brand-selling enables them to capitalize on the producers' extensive promotion, but it also complicates the problem of adhering to a multiple-line policy. And chemical manufacturers, too, have some cause for concern: as price competition stiffens, distributors may tend to abandon brand-selling.

**Help or Hindrance:** Although many exceptions do exist, chemical distributors on the whole believe they sell somewhat more by product (or chemical) name than by brandname. But customers are becoming more trademark conscious and brandname-selling is growing. Useful though the sales tool is, many feel that brand-selling is secondary in importance to price and service; it helps if all other factors are equal. Distributors cite two advantages to this type of selling, besides the brand preference invariably established in customers' minds:

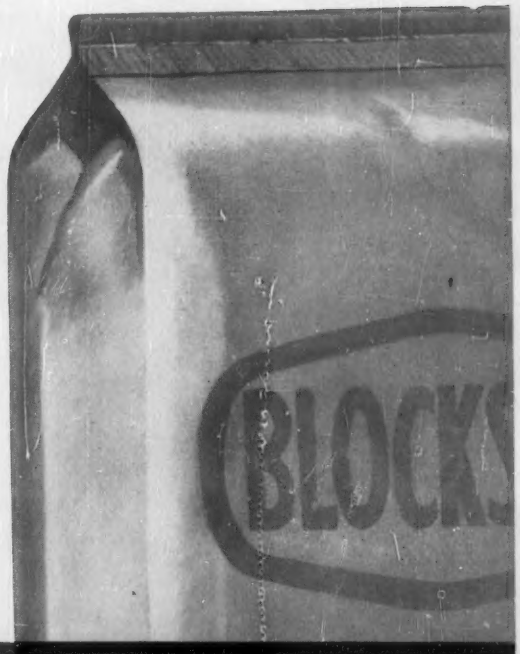
- Brandnames facilitate order handling—particularly by telephone. Use of the trademark tends to eliminate the need to give detailed specifications.
- Adoption of a brandname for a chemical is often accompanied by a marked improvement in packaging. The new package often becomes a valuable selling tool.

**Sodium Tripolyphosphate**

**Tetrasodium Pyrophosphate**
ANHYDROUS

**Sodium Polyphos**
(SODIUM HEXAMETAPHOSPHATE)
(SODIUM TETRAPHOSPHATE)

**Trisodium Phosphate**
CRYSTALLINE
MONOHYDRATE




# Sodium Phosphates

# BLOCKSON

**Trisodium Phosphate Chlorinated**

**Trisodium Phosphate**
ANHYDROUS
CRYSTALLINE

**Monosodium Phosphate**
ANHYDROUS
MONOHYDRATE

**Sodium Acid Pyrophosphate**

also major producers of:

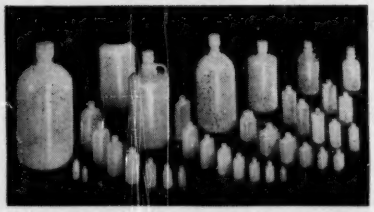
- SULFURIC ACID
- SODIUM FLUORIDE
- SODIUM SILICOFLUORIDE
- HYDROFLUORIC ACID
- HYGRADE FERTILIZER
- NONIONIC SURFACTANT—TEOX® 120

**BLOCKSON CHEMICAL COMPANY**
*Division of Olin Mathieson Chemical Corporation*
JOLIET, ILLINOIS

**no blind spots in**

# PLAX POLYFLEX® packaging

Now such perishables as meats and tomatoes are shedding "half-hiding" containers and slipping into trays of crystal-clear Polyflex. This tough plastic is odorless, tasteless, safe in direct contact with foods. It lets quality show "all over" while protecting contents in sturdy, semi-rigid trays, cartons, boxes or lids.



**More than ever "squeeze" bottles** by Plax lead the packaging parade. New, improved dispensing fitments, widest variety of stock bottle designs, unequalled facilities for meeting custom packaging needs make Plax the most logical source for plastic bottle packaging.

**New Lined Plax Bottle** (right) holds fluids that deform ordinary squeeze bottle.

**BOUNCING BABY DISH**
New baby dish is made by Plax of smooth, easy-to-clean polyethylene. It's light, unbreakable, colorful.

**For Progress in Plastics, Watch**

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The benefits, however, at least for some distributors, are outweighed by the drawbacks. Multiple-line selling becomes difficult because preferences become established, substitution becomes increasingly difficult. Conversely, in cases where the distributor carries only one brand, strong promotion for others can force him into multiple-line selling. More worrisome is the possibility of an altercation with the supplier. The distributor who pushes a specific brand can be in a dangerous situation if he is forced to shift suppliers.

**Producers' Viewpoint:** Do distributors do a good job of selling the brand as well as the chemical? Some producers think so, some think not; many think there is room for improvement. Fertilizer dealers in particular, believes one well-known company, do a particularly poor job of brand-selling. When distributors don't push brands, the producer's promotional effort is wasted in the wholesaler's area.

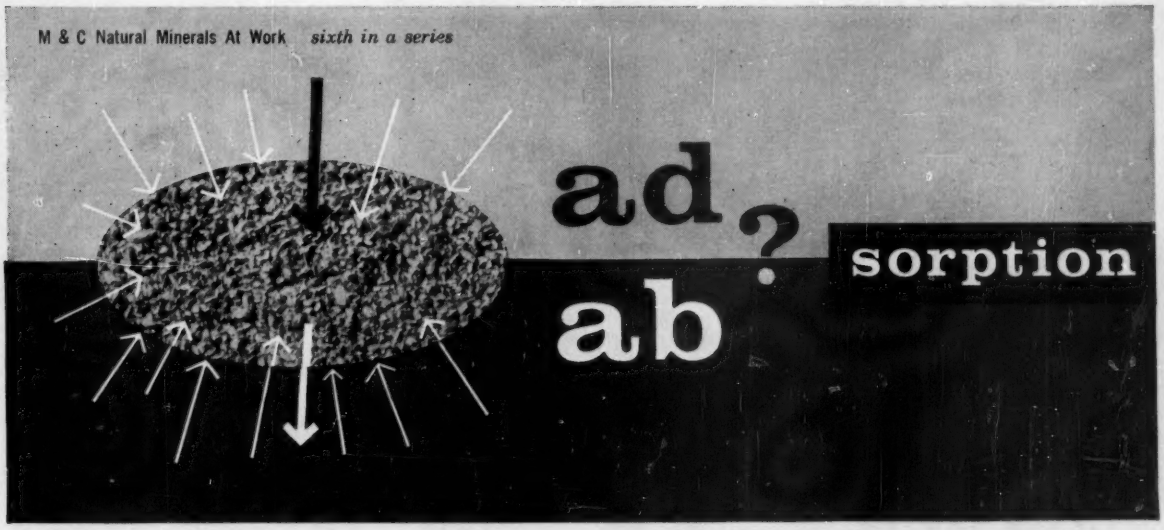
Worst feature of product-selling says one large Midwestern firm, is that it "can very easily lead to primary emphasis on price alone. It can destroy brand emphasis *per se*. And it can lead to the producer being considered just another source of supply. The distributor is very likely to become judge and jury. The entire theme of good marketing can be reversed if price and price alone becomes the sole emphasis—and this can well happen if brandselling is ignored." The eagerness of the jobber to promote a given brand can be built up. Best ways to do this, say many companies and distributors:

- Extensive advertising campaign and sales aid for the distributor.
- Close relationship between company salesman and the distributor. The salesman who has put himself on the best terms with the jobber is very often the one whose products are pushed the most.

The distributor's margin, too, is a factor, but perhaps not as important as generally supposed. For if one supplier gives the distributor a special deal, others are likely to follow suit, thus erasing the incentive to favor one brand.

Undoubtedly the trend to brand-names will continue, especially for new chemicals and specialties. It's unlikely that many producers will try tradenaming basic or heavy chemicals

M & C Natural Minerals At Work *sixth in a series*




## You choose the prefix . . . we'll supply the medium

*In The Field Of Sorption Processing,* did you ever debate *ad* versus *ab*? Aspects of pore structure, liquid-solid interface, solute, sorbate, etc., can lead a merry chase. But whichever the prefix, there's usually an M & C sorptive mineral that's ideal for the job to be done.

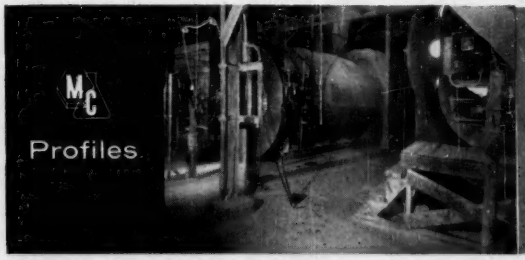
*Want To Take Molecules Out?* M & C offers grades to decolorize, refine, purify. You can use them to remove odors, colors, taste, moisture, acids, sulfur compounds, fluorides, unsaturates, and a host of other molecules you may be interested in.

*Or Put Them In?* Other M & C naturally-sorptive minerals serve as carriers in a wide variety of processes.

*Want Anti-Caking Protection?* This, too, is a job for M & C's low-cost sorptive materials. For example, in most cases less than 1% will condition even the most sticky, waxy or hygroscopic chemicals.

*Collecting Undesirable Water?* M & C reliable desiccants dry air, hydrogen, $CO_2$, hydrocarbons, other process fluids and gases.

*Let's Team Up.* We'll soon arrive at the right balance of efficiency, purity, treating conditions and economy, and your problem will be well in hand. Use the coupon.




Automatic controls and modern instrumentation in this bank of M & C rotary kilns insure tight process control over the many grades of sorptive minerals . . . more reasons to

**Think of M&C as:**

- Important miners and processors of non-metallic minerals
- Leaders in related research and development
- Marketers-Through-Service of a wide line of mineral products to meet industry's needs.

**MINERALS & CHEMICALS CORPORATION OF AMERICA**
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*M&C's trade-marked products include:*
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Activated Bauxite • Catalysts • Fluxstone • Kaolin • Lime Chemicals
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☐ 16-page bulletin that tells the full M & C story
☐ Samples, information on M & C sorptive products for use in

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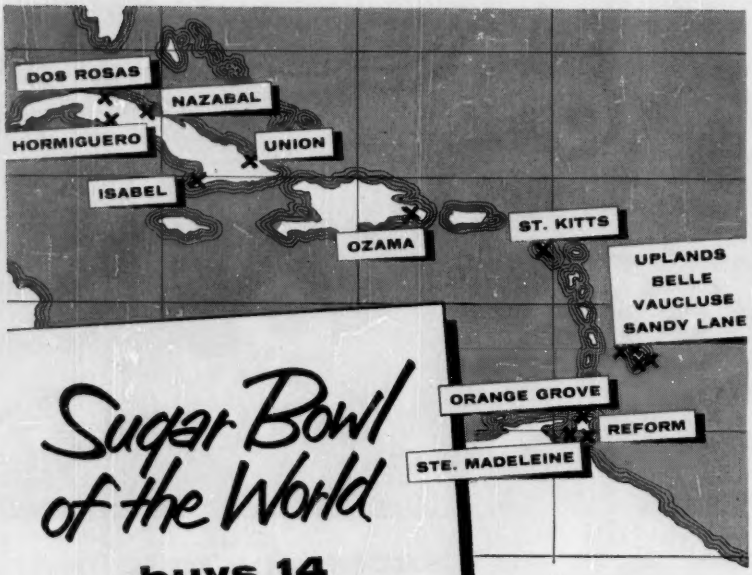


Sugar Bowl of the World

buys 14 Oliver-Campbell Cane Mud Filters in 1955

The West Indies have been called the sugar bowl of the world producing 10 million tons per year. And leading sugar factories here, as well as in other parts of the world, continue to install Oliver-Campbell Cane Mud Filters. In fact, 14 of these outstanding filters were sold in 1955 in these Islands alone.

Designed for long life and economical operation, Oliver-Campbell filters incorporate the latest filtration developments resulting in efficient cane mud washing. Operating advantages include — less inversion of sucrose and less re-solution of impurities, higher purity of filtrate, cleaner filtration station and accurate accounting of sucrose recovery.

Satisfying a "sweet tooth" may be only of academic interest to you. However, if you have problems involving any phase of the separation of finely divided solids in suspension . . . or ion exchange . . . or fluidizing technique — chances are that Dorr-Oliver and its world-wide organization can help you.

CANE SUGAR DIVISION • DORR-OLIVER INCORPORATED • STAMFORD, CONNECTICUT

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INCORPORATED
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STAMFORD • CONNECTICUT • U.S.A.


## SALES

(sulfuric, caustic, etc.), but brandname merchandising will play a more important role in chemical distribution.

## DATA DIGEST

• **Silicone Rubber:** 28-page data sheet and compounding study provides detailed information and instructions for manufacturers, fabricators and product designers about silicone rubber gum stock. Silicones Division, Union Carbide and Carbon Corp. (New York).

• **TKPP:** Technical bulletin lists typical analysis and properties of tetrapotassium pyrophosphate as well as rate of solution and vapor pressure of hydrates. Uses of TKPP in detergents, synthetic rubber, latex-based paints and water treatment are also included. Westvaco Mineral Products Division, Food Machinery & Chemical Corp. (New York).

• **Pressure-Sensitive Tapes:** Manual for designers, production engineers, purchasing agents and materials-handling men. It's designed to enable users of pressure-sensitive products to select tapes by government specification, by manufacturer's product number, by tape type and by specific application within 134 industrial classifications. Mystik Adhesive Products (Chicago).

• **Silicones:** Reference guide to almost 150 commercially available silicone products gives brief descriptions of each. Products are grouped by usage, enabling engineers to locate a material by what it does as well as by what it is. Dow Corning Corp. (Midland).

• **Bulk Container:** Folder illustrates seven basic types of corrugated container for heavy-duty packaging of bulk items such as chemicals, plastics, mechanical parts. Units are made of triple rows of fluting and are said to have the rigidity of plywood. Tri-Wall Containers Inc. (New York).

• **Polyester Film:** Fold-out brochure describes heat-sealable polyester films. Applications, properties, in-use photos are included. Film Products Division, Minnesota Mining & Mfg. (St. Paul).

• **Molding Compounds:** Thermosetting molding compounds—urea and melamine—together with polyester resins are described in an illustrated folder. Barrett Division, Allied Chemical & Dye (New York).

EPOXIDATION NEWS FROM BECCO

# ®BECCO'S New Protected-Resin Process Improves Economics of In Situ Epoxidation

Heretofore, processes employing ion exchange resins to catalyze *in situ* epoxidation reactions had a serious drawback—resin attack by the oxidizing medium shortened resin life, causing handling difficulties, higher operating costs, lower efficiency.

The new Becco process, by using a special resin type and resin treatments along with a protective agent, prevents resin attack, thus increasing process efficiency beyond previously attainable levels.

The process does not demand special modification of equipment or unusual techniques. It is applicable generally to epoxidation reactions by the batch or continuous flow fixed bed technique.

The protected-resin process is but one of many epoxidation processes developed by Becco and will be described in a forthcoming paper. Ask Becco for process details.

General information on epoxidation processes is contained in Becco Bulletin No. 69, available on request.

**BECCO CHEMICAL DIVISION**
FOOD MACHINERY AND CHEMICAL CORPORATION
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NEW YORK • PHILADELPHIA • VANCOUVER, WASH.

PROGRESS THROUGH CHEMISTRY

# Davison...leader in Silica Gel

Davison pioneered in the development of the first commercially useful silica gel more than three decades ago, and for years has been America's leading producer. Silica gel, with its porous amorphous physical structure providing a surface area of 90,000 square feet per cubic inch, is a unique compound of continuing importance and increasing application. Silica gel's most important properties are its ability to condense and retain condensable gases in the porous structure and its regenerable nature through the application of heat or other elutriation methods. A wide variety of particle sizes, densities and adsorptive capacities are available, each having been developed to meet specific application demands. Investigate Davison Silica Gel, now.

See your Davison Field Service Engineer or write for technical literature.

## DAVISON CHEMICAL COMPANY

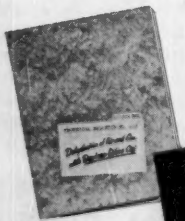
*Division of W. R. Grace & Co.*

**Baltimore 3, Maryland**

**Sales Offices: Baltimore, Md.; Chicago, Ill.; Columbus, Ohio; Houston, Texas; New York, N. Y.**

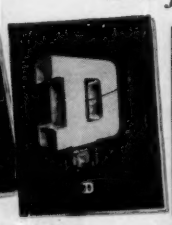
**Producers of: Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates, Phosphate Rock, Silica Gels, Silicofluorides: Sole producers of DAVCO® Granulated Fertilizer.**

*ask for . . .*



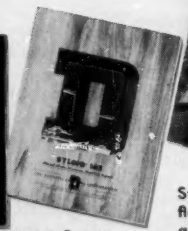
Davison Silica Gel for the dehydration of air and gas.

Syloid® 308 . . . lacquer flatting agent.

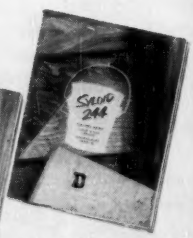


Syloid® AL-1 . . . prevents gas build-up in metallic paint.

Protek-Sorb® 121 . . . for Method II dehydrated packaging.



Syloid® 162 . . . alkyd-urea varnish flatting agent.



Syloid® 244 . . . superior flatting agent in clear alkyd finishes and oleoresinous varnish.

## Something New In Safety Glass

**Dow Corning Corp.** (Midland, Mich.)—a new name in safety glass—has just presented its new Silastic Type K interlayer* to Air Force men at a conference at Wright Field, Dayton, O. Although the plastic was designed to solve a specific problem of supersonic aircraft, it may prove to be a step toward something automobile safety engineers have been seeking for years.

Since its adoption in 1938, polyvinyl butyral (PVB) has been unrivaled as an interlayer in safety glass. But, at the same time, it doesn't come up to the ideals of safety engineers, who cite windshields as one of the three most dangerous parts of the automobile (ranked with steering wheels, dashboards). To get a better plastic center for glass sandwiches, glass makers have spent millions of dollars on research, mostly to no avail. Until the advent of Silastic, they had been able to find no other substance that even approached PVB's proficiency as an interlayer.

The Dow Corning product matches important PVB qualities and has at least one big plus: heat resistance. This was what the Air Force asked for. At the high speeds of current military aircraft, heat—resulting from air friction—causes conventional safety glass to lose its shatterproof quality. The PVB interlayer, at temperatures over 150-180 F, bubbles, ripples, and then oozes out the edges, leaving just two panes of glass. Silastic, on the other hand, doesn't melt up to 350 F, is also—unlike PVB—good below —65 F.

Uncured Silastic by itself is unimpressive. It's soft, plastic, weak, sticky (one asset, it eliminates need for an adhesive), and translucent. But when sandwiched and cured, it performs similarly to PVB; at room temperature, however, it isn't as strong as PVB (which is far stronger than it needs to be) and though not quite as transparent, the difference is small. Silastic is considerably more expensive, although this is relatively unimportant.

Production is limited now, with al-

* Major interlayer makers: Bakelite Division, Union Carbide and Carbon; Monsanto; Du Pont.

Up she goes!...at Sinclair's new UDEX Plant built by Badger Manufacturing Company.

**42-ton stripper...by Downingtown**

**Diameter: 6′ I.D. • Total Height: 133′ 3″ • Shell Thickness: ¾″**
**Material: Carbon Steel • Total Weight: 42 tons • 40 Bubble Cap Trays**

Fabricated at DOWNINGTOWN IRON WORKS for Badger Manufacturing Company. Stress relieved...spot X-rayed...Code stamped. Field erected by Badger Manufacturing Company at UDEX Plant of Sinclair Refining Company, Marcus Hook, Pa. Send for Bulletin PF and learn more about Downingtown engineering experience and fabricating skill.

**Downingtown Iron Works, Inc.**

HEAT EXCHANGERS—STEEL AND ALLOY PLATE FABRICATION

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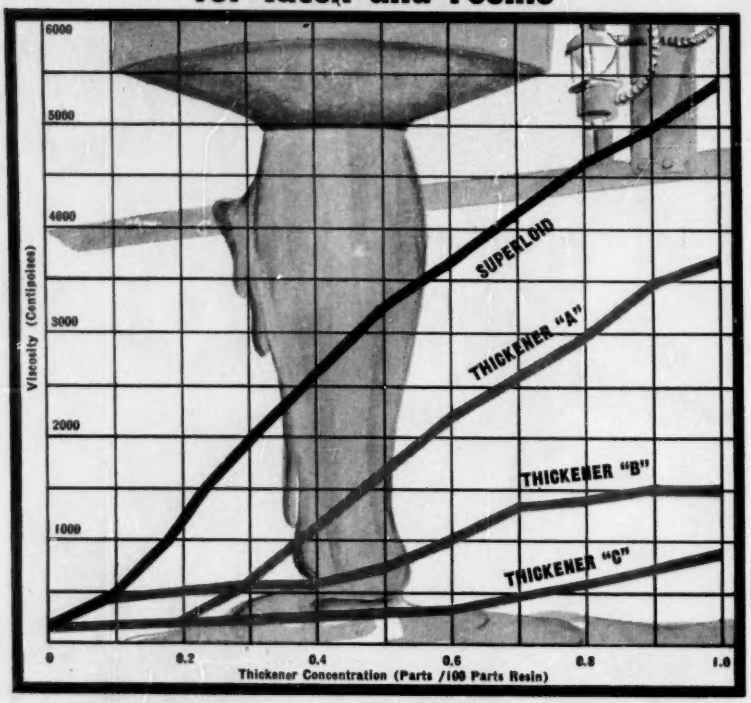
DOWNINGTOWN IRON WORKS INC. Hackney

**CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS**

# Never before so efficient a thickener for latex and resins




# SUPERLOID PROVES 61% SUPERIOR TO OTHER THICKENERS

This remarkably effective thickening agent produces desirable body and substantially improves working properties of latex and resin preparations. A highly efficient binder and stabilizer, Superloid prevents water separation and holds filler ingredients in improved suspensions. Especially effective for maintaining stability of dilute latex systems!

Easy to use, Superloid aids film formation and improves spreading characteristics. Provides viscosity control to meet precise penetration requirements. It reduces impregnation, prevents shrinkage patterns in thin coatings and films.

Superloid measurably improves processing in such diverse applications as: bodying of resin and latex adhesives for better working properties and improved spread; conditioning of latex for fabric backing applications; imparting desirable body and workability to latices for paper and textile sizings and coatings; and in other latex and resin applications for thickening, bodying, stabilizing, bonding and suspending.

If your latex or resin process or processing requires a thickening agent and stabilizer, Superloid may well test most efficient for your application.

**YOURS ON REQUEST:** FREE Superloid Sample and Technical Bulletin yours without obligation. Please write our nearest regional office today.

**SUPERLOID**

**PRODUCT OF KELCO COMPANY**

120 BROADWAY, NEW YORK 5, NEW YORK
20 N. WACKER DRIVE, CHICAGO 6, ILL.
530 W. SIXTH ST., LOS ANGELES 14, CAL.
CABLE ADDRESS: KELCOALGIN — N. Y.




most all of the product going to the Air Force. Other markets might develop later, where safety glass must withstand high temperatures, as, for example, in peek-in oven doors.

But perhaps the greatest significance of the development will turn out to be the break-away from safety glass's 18-year technological plateau. Don't expect to see Silastic in automobiles right away, however. So far, it can't improve upon PVB's performance at normal temperatures—which are all that are usually encountered by an auto windshield. On the other hand, one idea auto men have been talking about might put the new interlayer into the lucrative automobile safety glass market for keeps. Auto engineers may electrify windows for de-icing and such a "hot" windshield can't be made with PVB.

## More for Oxidation

**It looks as though there will soon be more suppliers of oxidized-in-the-U.S. Fischer-Tropsch waxes made from South Africa's Sasol plant raw materials.**

First company to claim production here of the low-cost, emulsifiable waxes was Aerogon Chemical Industries, Inc. (New York). Now, word is that one of the major suppliers of the petroleum-derived, oxidized microcrystalline waxes, Petrolite Corp.'s Bareco Wax Division, is making substantial test runs on the Sasol-made hydrocarbon waxes.

The move by Petrolite-Bareco is logical; it has had half-a-dozen years' experience in oxidizing the "tank-bottom" or microcrystalline waxes, and there is a basic similarity in the processes for turning out the two types. The firm has established sales contacts in the industries that might use the new waxes. And there's no denying that tank-bottom waxes and the Fischer-Tropsch waxes, when oxidized, are aimed for about the same general markets.

But all concerned are reluctant to talk. Bareco, with facilities in Tulsa, Okla., says, "No comment," when asked about the chances of going commercial with the oxidized Fischer-Tropsch materials now, although it definitely doesn't sell them.

Boler Petroleum Co., Inc. (Philadelphia), allied with Bareco, but with other oxidizing facilities, won't commit itself, either.

Unoxidized Fischer-Tropsch waxes are sold in this country by Moore & Munger, which gets the Sasol product, and by Dura Commodities Corp., which gets its stocks from Germany. Dura also sells oxidized waxes; M&M does not. So far, U.S. firms oxidizing the wax buy it from M&M; Dura's oxidized material is produced in Germany, and so far as is known, Dura sells to no U.S. firms for domestic oxidation.

## Anti-Medfly Progress

**Strongest indication yet** of progress in the battle against the Mediterranean fruit fly came out of Florida last week: Palm Beach County, which has been under quarantine restrictions (no fruit or vegetables could be sent interstate) since last May, is now off the list. Last spring, heavy infestation of the pest was noted in the southeastern corner of the county, and a strong spray program was immediately inaugurated. For the past three months, the county has been free of the Medfly, and last week the U.S. Dept. of Agriculture lifted the shipping ban.

The Medfly campaign is by no means over, however. In Florida, the counties of Broward, Collier, Dade, Hendry, Lee and Pinellas are still under quarantine.

## PRODUCTS

**De-Weeder:** Stauffer Chemical Co. has extended its interest in carbamate agricultural chemicals with a new herbicide, EPTC. The new compound, ethyl N, N-di-n-propylthiolcarbamate, is still experimental, but has shown good results in control of grassy weeds growing with alfalfa, corn, carrots, tomatoes, sugar beets and clover. Both pre-emergence and post-emergence applications appear to be useful.

•

**Decision on Packaging:** The Bracon collapsible polyethylene tube is now being used on regular basis for packing E. R. Squibb's brushless shaving cream. Squibb is selling a 5¼-oz. "giant" size.

B. T. Babbitt, Inc. is the first liquid synthetic detergent maker to go into national distribution of its product Glim, in Bracon's 12- and 22-oz. squeeze cans. These units, polyethylene tubes with metal top and bottom, have "captive" caps that can't be lost.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# Profile: The Collective Chemical Man

**Figures refer to per cent of those surveyed.**

| What He Does | Research, development or field exploration | Management or administration | Teaching | Production | Other |
|---|---|---|---|---|---|
| All scientists* | 49.4 | 17.9 | 15.8 | 3.5 | 13.4 |
| Chemists | 56.5 | 14.8 | 11.4 | 2.4 | 14.9 |
| Chemical engineers | 36.6 | 26.8 | 3.8 | 11.6 | 21.2 |

| Where He Works | Industry | Government | Education |
|---|---|---|---|
| All scientists | 50.8 | 17.6 | 31.6 |
| Chemists | 71.1 | 8.7 | 20.2 |
| Chemical engineers | 89.5 | 4.6 | 5.9 |

| His Educational Level | Ph. D. | Master's | Bachelor's and first professional degree | Less than bachelor's |
|---|---|---|---|---|
| All scientists | 41.3 | 25.1 | 31.8 | 1.8 |
| Chemists | 47.8 | 19.0 | 31.7 | 1.5 |
| Chemical engineers | 15.5 | 24.6 | 58.1 | 1.8 |

*Besides chemists and chemical engineers, includes astronomers, biologists, geologists (including geophysicists), mathematicians, meteorologists, physicists, psychologists.

# More Light on Manpower

**Industrial research directors who set out to recruit chemists and chemical engineers from government and education posts will find the pickings lean. That's one important message contained in a new study by the National Register of Scientific and Technical Personnel (Washington).**

The work embraces employment statistics of more than 94,000 scientists for the years 1954-55. While 57% of all chemists and 37% of all chemical engineers are in research, 90% of the chemical engineers and 71% of the chemists already have jobs in industry.

Moreover, only 11% of the chemists and 4% of the chemical engineers are actually teaching, the NRSTP survey reveals—fewer than in 1951, as shown by comparison with its previous survey. Additional inroads by industry can't do much more than further curtail the supply of future researchers.

For purposes of its study, NRSTP defined a "scientist" as either a Ph. D.-degree holder or a person with a bachelor's degree (or the equivalent in education or training) having four years of professional experience or training in a scientific specialty. NRSTP sought returns from astronomers, biologists, geologists (including geophysicists), mathematicians, meteorologists, physicists and psychologists, as well as chemical men.

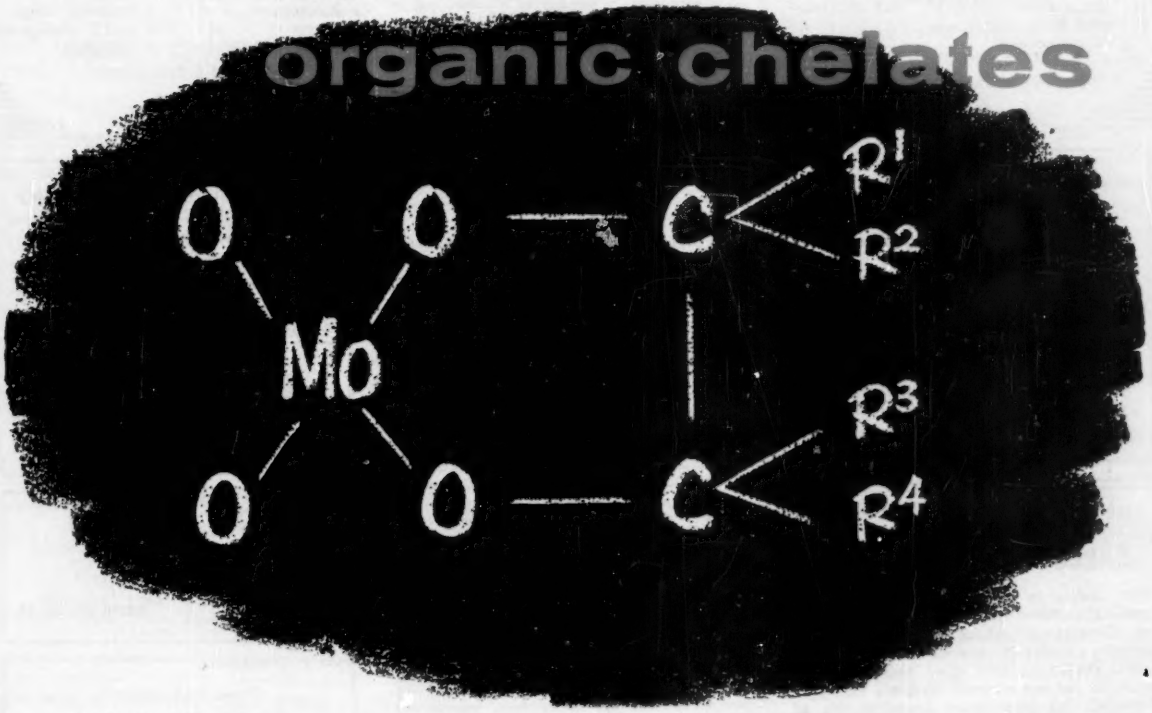
In the "industry" category are included scientists who work for private companies, nonprofit institutions, privately controlled research centers, or for themselves. Note: in research, chemical engineers are not as numerous as chemists; but in management they outnumber the chemists nearly 2 to 1 (27% vs. 15%).

From the table (*above*), it's apparent that research is the major job function of most scientists. One half are in research, development or field exploration. Concomitantly, more than 41% of the scientists have Ph. D. degrees. Forty-eight percent of the chemists, only 16% of the chemical engineers hold doctorates.

If researchers as a group are scarce, women researchers are even more scarce, the survey shows. Of 7,000 women who responded to the survey, 6% are chemists, only 2% are in chemical engineering.

# MOLYBDIC OXIDE

## –key to new family of organic chelates




Molybdic oxide, $MoO_3$, and the related molybdates, $R_2MoO_4$, form chelates or complexes with many organic oxygen, sulfur and nitrogen compounds. Among these are:

| | |
|---|---|
| **Polybasic acids** | **Xanthates** |
| **Polyalcohols** | **β-diketones** |
| **Polyphenols** | **Aromatic bases** |
| **Thiophenols** | **Amines** |

Each of these classes of compounds forms a number of complexes with varying properties. For example, oxalic acid forms complexes with molybdenum in the +3, +4, +5 and +6 valence states. Some typical properties of these oxalates are described at right.

**$Mo^{III}$ oxalates** are non-ionic. Examples are the water-soluble $Mo_2O(C_2O_4)_2 \cdot 6H_2O$ and the insoluble $Mo_4O_5(C_2O_4)_3 \cdot 12H_2O$.

**$Mo^{IV}$ oxalates** are both ionic and non-ionic. Ionic complexes of the type $R_2Mo_3O_4(C_2O_4)_3 \cdot 2H_2O$ are strong reducing agents. They are red in acid solution, blue in alkaline. Among non-ionic complexes are the purple $Mo_3O_6(C_2O_4)_4$ and the brown $Mo_4O_5(C_2O_4)_8 \cdot 10H_2O$, both soluble in water but insoluble in organic solvents.

**$Mo^{V}$ oxalates** are highly colored. Salts of the type $RMoO_2(C_2O_4) \cdot H_2O$ are red in concentrated water solution, but turn yellow on dilution. Mineral acids convert them to other highly colored compounds; for example HCl yields green complexes of the type $R_2(MoOCl_5)$. Other $Mo^{V}$ complexes include the orange $(C_5H_5N)H \cdot MoO_4O_8(C_2O_4)_4 \cdot 6H_2O$, the red $K\,MoO_2(C_2O_4) \cdot H_2O$, and the yellow $(C_5H_5N)MoO_2(C_2O_4) \cdot H_2O$ and $Mo_2O_5(C_2O_4)_2 \cdot 4H_2O$.

**$Mo^{VI}$ oxalates** are water soluble, but their amine salts are not. These complexes are apparently ionic.

**Can you use these chelating powers of molybdenum? They are discussed more fully in a new bulletin, "Organic Complexes of Molybdenum". Write for it and for samples of molybdic oxide or sodium molybdate to Climax Molybdenum Company, Dept. 28, 500 Fifth Avenue, New York 36, N. Y.**

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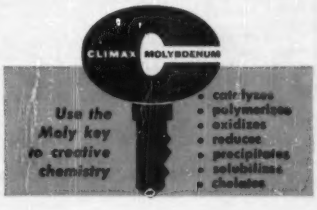

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This is a top position for an alert, resourceful, hard hitting salesman with wide acquaintance amongst manufacturing and purchasing organizations of the cosmetic, toiletry and drug manufacturers. Headquarters will be in New York-Connecticut area. Tremendous opportunity and future for the right man. Our organization knows of this ad. Resumes held in confidence. Appointment will be arranged.

**SW-3768 CHEMICAL WEEK**

Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

## WANTED
## SALES CORRESPONDENT

With ability to carry on direct mail sales, handling customer sales service and follow up for Connecticut aerosol contract packaging company catering to cosmetic, drug and toiletry fields. Experience with these types industries preferred but not essential. Resumes kept confidential. Our organization knows of this ad.

**P-3767 Chemical Week**

Class. Adv. Div. P.O. Box 12, N. Y. 36, N. Y.

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We are looking for sales trainees to sell advertising space for CHEMICAL ENGINEERING or CHEMICAL WEEK. No selling experience necessary. Age requirement 21-30 years. Opportunities unlimited. Send complete résumé or phone for appointment. Contact Steven J. Shaw, Advertising Sales Manager, CHEMICAL ENGINEERING • CHEMICAL WEEK, McGraw-Hill Publishing Co., 330 W. 42nd St., New York 36, N. Y. Phone: LOngacre 4-3000. Ext. 693.

## OPPORTUNITIES

**Dextrine chemist** experienced in corn and tapioca conversions and envelope gum formulations.
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**H. B. FULLER COMPANY**
**181 W. Kellogg Blvd., St. Paul 2, Minn.**

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**P-3766 Chemical Week**
Class. Adv. Div. P. O. Box 12, N.Y. 36, N.Y.

### *Positions Vacant*

***Chemist-engineer, age 40 or over, experienced*** in the manufacture of potash soaps and automotive greases, emulsions, sulphurized cutting oils and/or petroleum blending control and packaging. Full particulars, References. Bryant Chemical Company, 13650 Helen Avenue, Detroit 12, Michigan.

***Wanted: Chemist or Chemical Engineer with*** 1-3 years experience in insulation board, pulp and paper, or related industry for assistant to Quality Control Supervisor in large insulation board plant located in South on Gulf Coast. Will consider recent graduate without experience if potential is promising. Write P. O. Box 1528, Mobile, Alabama for application and personal interview appointment.

### *Selling Opportunity Offered*

***Colorado Mfg. Agent offers technical sales*** representation, industrial lines. RW-3709, Chemical Week.

### *Positions Wanted*

***(Female) Executive Assistant. Secretary, B.S.*** Chemistry, aptitude for figures, experienced editing, technical reports, high caliber, excellent references, responsible, desires non-routine position. New York Metropolitan area. PW-3716, Chemical Week.

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CHEMSOL, INC.
70 Dod Street, Elizabeth, N.J. EL 4-7654

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BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street New York 13, N. Y.
WORTH 4-5120

**SURPLUS WANTED**

CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.
CHEMICAL SERVICE CORPORATION
96-02 Beaver Street, New York 5, N. Y.
HAnover 2-6970

**CHEMICAL PLANT, DELAWARE—Sale or Lease.**

Complete for urea plastic molding compounds. Kettle, Ball Mills, P & S Belt Dryer, preformers, etc. Large unrestricted acreage.
BO-3763 Chemical Week
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all other finished package goods.
National Bottle Trading Co.
2061 Broadway, N. Y. 23, N. Y.
Susquehanna 7-2635

**For Sale**

***Bird Stainless Steel Continuous Centrifugals*** 40" x 60", 32" x 50". Excellent Condition. Perry Equipment Corp. 1415 N. 6th St., Phila. 22, Pa.

***F. J. Stokes 3'D x 10'L Rotary Vacuum Dryer,*** jacketed; with drive, condenser, etc. Perry, 1415 N. 6th St., Phila. 22, Pa.

***Approx. 24,500 gal. Horizontal Aluminum Tank,*** 10'D x 40' long, ½" thick shell, ⅜" thick dished heads. Perry, 1415 N. 6th St., Phila. 22, Pa.

***1—Used "American Tool" stainless suspended*** centrifugal, 40 x 24 used a few weeks only for concentration of fruit juices, like new, now with 15/7½ HP, 1200/600 RPM, 60 cycle, 220 volt, 3-phase, AC motors and starters, (Brand new explosion-proof motors can be substituted if required from stock at extra cost), available immediate delivery, can be inspected as last used, still erected, subject prior sale. FS-3761, Chemical Week.

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Box 12
330 W. 42nd St., N.Y. 36, N.Y.

## RESEARCH

## EXPANSION

- Princeton University has opened its new $450,000 James Forrestal Research Center. It will serve as headquarters for "Project Matterhorn," a classified research program concerned with potential peacetime use of controlled hydrogen fusion power.
- Texas-U.S. Chemical Co. (jointly owned by the Texas Co. and U.S. Rubber Co.) has purchased the 26-acre Sedgefield Manor property in the Parsippany-Troy Hills Township of Morristown, N.J. The land will be the site of a center for research on synthetic rubber and petrochemicals. Construction is scheduled to start next year.
- Socony-Mobil Oil Co. has obtained an option to purchase a 315-acre site between Pennington and Princeton, N.J., for construction of a research laboratory and, possibly, a nuclear reactor.
- Arthur D. Little, Inc., is building a solar furnace for high-temperature research. Completion is due in the near future.
- Speer Carbon Co. has broken ground for a new 23,000-sq.-ft. research and development laboratory at Niagara Falls, N.Y.
- Strathmore Paper Co. has opened a new $150,000 research laboratory adjacent to its West Springfield, Mass., mill.
- A new multimillion-dollar Structures and Mechanics Laboratory will be erected at the Army Ballistic Missile Agency at Redstone Arsenal. The 183,000-sq.-ft. unit is expected to be completed by May '58.
- Goodyear Tire & Rubber Co. has opened its new $125,000 radiation laboratory at Akron, O. Source will be 2,100 curies of cobalt-60.
- Martin Co.'s Nuclear Division has just installed a 5,500-curie, cobalt-60 source at its Baltimore lab. It is the second gamma source installed here; the first—an 800-curie, cobalt-60 source—has been used for test-tube-scale radiation research.
- American Lithium Institute has been formed at Princeton, N.J., by the three major U.S. lithium producers—American Potash & Chemical Corp., Foote Mineral Co., Lithium Corp. of America. Purposes: to direct research on lithium and its compounds and to correlate and disseminate technical data on lithium.

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Francis E. Stewart, 520 N. Michigan Ave., Mohawk 4-5800

Cleveland 15 .....Vaughan K. Dissette, 1510 Hanna Bldg., Superior 1-700

Dallas 2 ....Gordon L. Jones, Adolphus Tower Bldg., Main & Ackard Sts., Riverside 7-5064

Detroit 26 .....856 Penobscot Bldg., Woodward 2-1798

London ...H. Lagler, McGraw-Hill House 95 Farrington St., E.C. 4, England

Los Angeles 17 .....Peter Carberry, 1125 West Sixth St., Madison 6-9351

New York 36 .....Knox Armstrong, P. F. McPherson, Charles F. Onasch, L. Charles Todaro, 330 West 42 St. LOngacre 4-3000

Philadelphia 3 .William B. Hannum, Jr. Architects Bldg., 17th & Sansom Sts., RIttenhouse 6-0670

Pittsburgh 22 .....919 Oliver Bldg. Atlantic 1-4707

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# The Safe Path Between Planning and Production

The most hazardous part of the path to profits on a major investment in petrochemicals is before the plant goes on stream. Prolonged evaluation of processes and other delays in getting into production can add up to millions . . . in engineering man-hours, tied-up capital, increased labor and materials costs, procurement problems, the loss of production—and even a market itself.

Standard Oil Company of California, fully aware of these hazards, invited The M. W. Kellogg Company to participate closely in the initial planning of its new multimillion dollar ammonia plant at Richmond, California. By assigning the subsequent process design, plant engineering, and construction responsibility to Kellogg, Standard chose a path to completion that proved not only safe but fast. From the earliest discussions to the recent on-stream date, this 300 ton/day plant was producing as guaranteed in 14 months.

Further evidence of the M. W. Kellogg safe-and-sure approach to the manufacture of ammonia, butadiene, ethylene, phenol, and other petrochemicals may be obtained by contacting the company's Chemical Process Division.

*Visible economies at Standard Oil Company of California's new ammonia plant include the high pressure reforming unit, which greatly reduces compressor costs; skeleton-type, economical outdoor construction; and permanent, labor-saving derrick for handling catalyst.*

**CHEMICAL PROCESS DIVISION**

**THE M. W. KELLOGG COMPANY**

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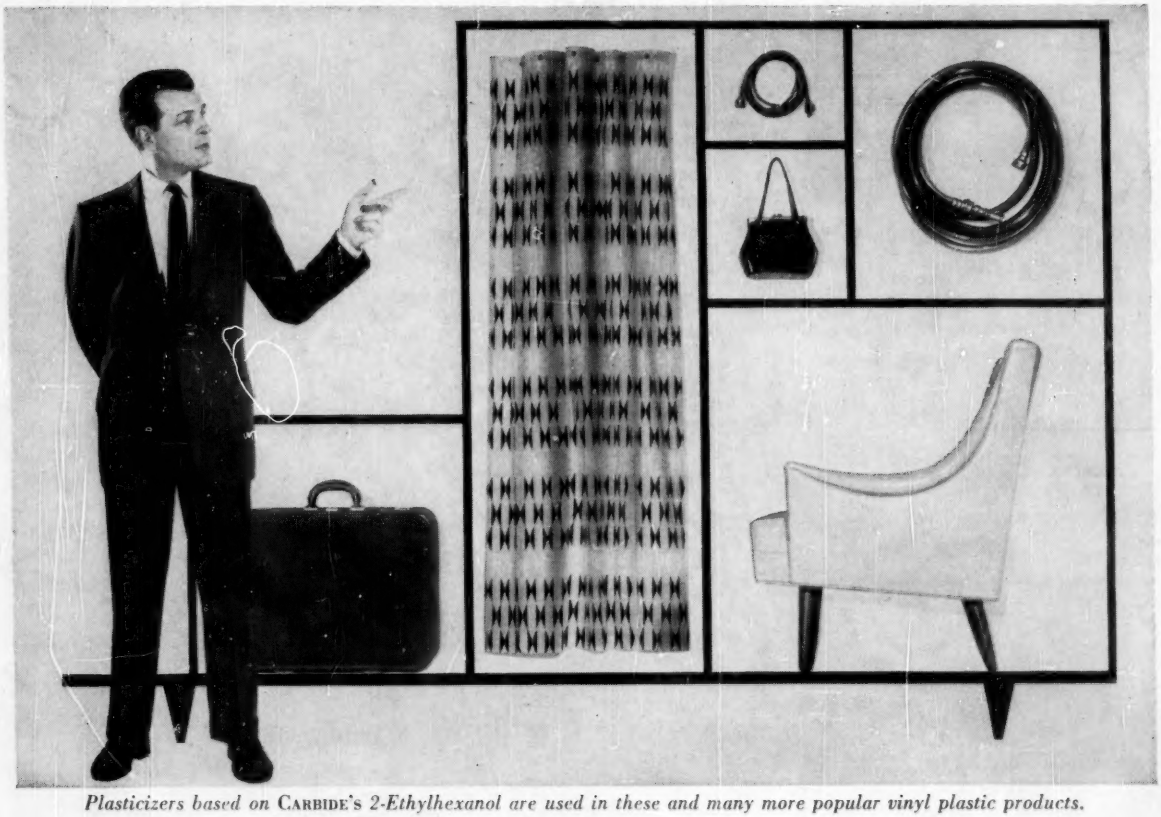

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